A REVIEW OF THE AUSTRAL SPIDER FAMILY ORSOLOBIDAE (ARACHNIDA, ARANEAE), WITH NOTES ON THE SUPERFAMILY DYSDEROIDEA

RAYMOND R. FORSTER
Research Associate, Department of Entomology
American Museum of Natural History
Director, Otago Museum, Dunedin, New Zealand

NORMAN I. PLATNICK
Curator, Department of Entomology
American Museum of Natural History
Adjunct Professor, Department of Biology
City College, City University of New York

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ABSTRACT

The monogeneric tribe Orsolobini Cooke is removed from the Dysderidae, elevated to familial status, and redefined to include those dysderoids with a raised tarsal organ. As relimited, the family contains 170 species from Australia, Tasmania, New Zealand, the Auckland and Campbell Islands, Chile, Argentina, and the Falkland Islands. Six genera are transferred from the Oonopidae to the Orsolobidae: *Tasmanoonops* Hickman, *Cornifalx* Hickman, *Ascuta* Forster, *Duripelta* Forster, *Pounamuella* (*nomen novum* for *Pounamua* Forster, preoccupied), and *Subantarctia* Forster. Eighteen new genera are described: *Falklandia* (type species *Orsolobus rumbolli* Schiapelli and Gerschman from the Falkland Islands), *Mallecolobus* (type species *M. malacus*, new species, from Chile; also including three other new species from Chile), *Chileolobus* (type species *C. eden*, new species, from Chile), *Osornolobus* (type species *O. canan*, new species, from Chile; also including 16 other new species from Chile), *Hickmanolobus* (type species *Oonopinus mollipes* Hickman from Tasmania, transferred from the Oonopidae), *Australobus* (type species *A. torbay*, new species, from Western Australia), *Waipoua* (type species *W. toronui*, new species, from New Zealand; also including *Pounamua totara* Forster from New Zealand, *P. gressitti* Forster from Campbell Island, and five other new species from New Zealand), *Wiltonia* (type species *W. graminicola*, new species, from New Zealand; also including eight other new species from New Zealand), *Tautukua* (type species *T. isolata*, new species, from New Zealand), *Bealeyia* (type species *B. unicolor*, new species, from New Zealand), *Dugdalea* (type species *D. oculata*, new species, from New Zealand), *Anopsolobus* (type species *A. subterraneus*, new species, from New Zealand), *Turretia* (type species *T. dugdalei*, new species, from New Zealand), *Orongia* (type species *O. medialis*, new species, from New Zealand; also including two other new species from New Zealand), *Paralobus* (type species *Ascuta salmoni* Forster from New Zealand), *Tangata* (type species *T. nigra*, new species, from New Zealand; also including *Ascuta stewartensis* Forster, *A. rakiura* Forster, *A. orepukiensis* Forster, *A. alpina* Forster, *A. plena* Forster, and 11 other new species from New Zealand), *Maoriata* (type species *Ascuta magna* Forster from New Zealand; also including two new species from New Zealand), and *Waiporia* (type species *W. wiltoni*, new species, from New Zealand; also including *Ascuta extensa* Forster, *A. modica* Forster, *A. algida* Forster, *A. mensa* Forster, *Pounamua hornabrooki* Forster, and six other new species from New Zealand). Sixty-two other new species are described in previously established genera: seven *Orsolobus* from Chile and Argentina, 25 *Tasmanoonops* from Australia and Tasmania, and 10 *Ascuta*, 13 *Duripelta*, 3 *Pounamuella*, and 4 *Subantarctia* from New Zealand. *Ascuta pallida* Forster is transferred to *Duripelta*. The females of *Tangata rakiura* (Forster), *T. plena* (Forster), *Waiporia modica* (Forster), and *Pounamuella ramsayi* (Forster) and the male of *P. australis* (Forster) are described for the first time. The characters of the four dysderoid families are reviewed.

INTRODUCTION

The six-eyed haplogyne spiders treated in the present paper have been familiar to the first author since their discovery in New Zealand some thirty-five years ago during a survey of the forest litter fauna. Over the ensuing years, it has become evident that this group of spiders forms an important and varied element in the austral litter fauna, and that a large number of species and genera are involved.

As with many other groups of New Zealand spiders, problems soon arose when an attempt was made to assign them to an established family. On the basis of the traditional criteria, their characters exclude them from both of the families to which they are obviously most closely related—the Oonopidae and Dysderidae. As it happened, the first species discovered (described in a faunal survey of the New Zealand subantarctic islands as *Subantarctia turbotti* Forster, 1955) was a large and unpatterned form with a relatively complex palpal bulb similar to those of many Mediterranean Dysderidae. Because of these palpal similarities, as well as the retention of cheliceral teeth and the female palpal claw, *Subantarctia* was placed in the Dysderidae.

Later, when related spiders from the mainland of New Zealand, including many of the smaller species, were described (Forster, 1956), it was decided on the basis of the prominent bipectinate claws that the assem-

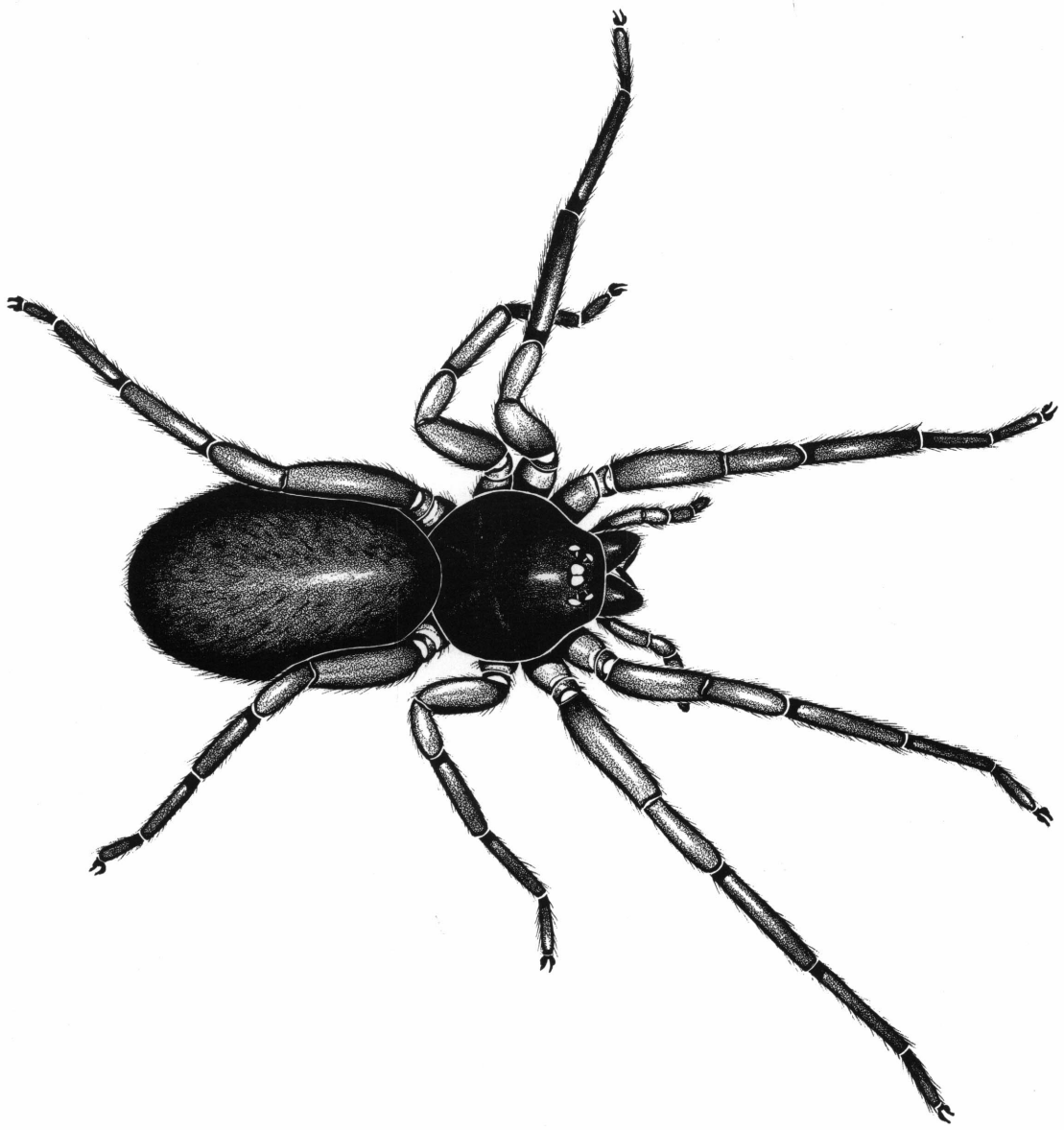

FIG. 1. *Subantarctia* sp., drawn from life in typical walking pose with anterior legs stretched forward.

blage should be placed in the Oonopidae instead. It was noted then, however, that if this association were to be maintained, the classical familial arrangement of the dysderoids would need to be rethought.

Little subsequent progress was made on this project until the advent of scanning electron microscopy allowed a detailed examination of the unusual tarsal structures recorded earlier as the "tarsal tubercle" and "tarsal thorns" (Forster, 1956). These studies indicated that the "tarsal tubercle" is in fact homologous to the tarsal organ, already known to occur in many other spiders. That realization led to a widespread investigation into the form of this organ, particularly in other haplogyne taxa, where it had been largely overlooked in the earlier survey carried out with light microscopy by Blumenthal (1935).

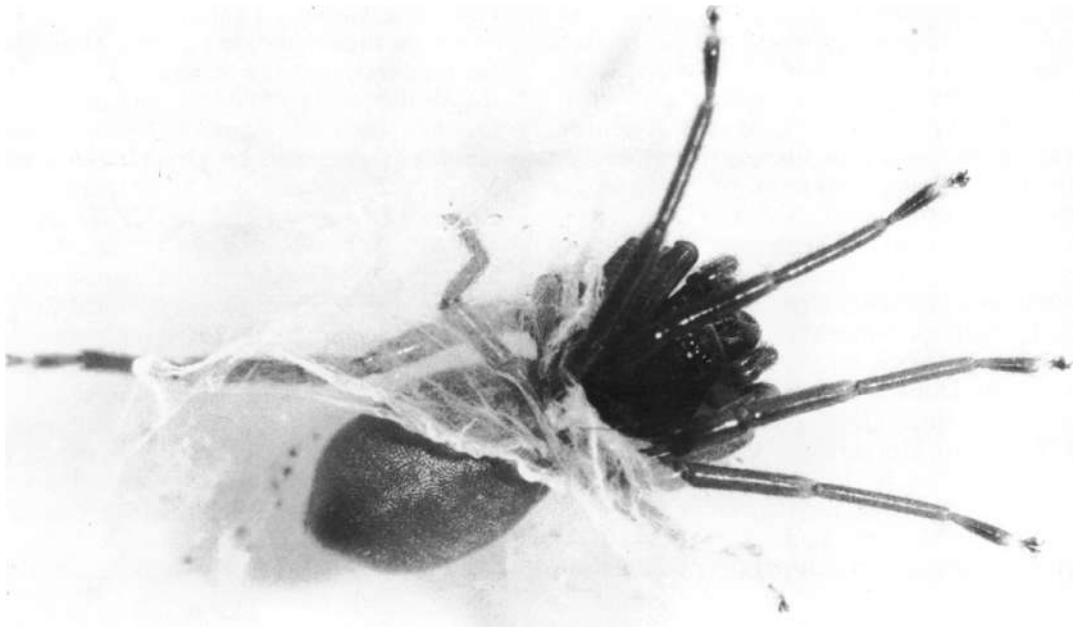

FIG. 2. *Subantarctia* sp., photographed emerging from a purse retreat; the posterior portion of the retreat has been damaged but the thin translucent silk sheet can be seen covering the anterior portion of the abdomen.

It soon became obvious that the orsolobid tarsal organ provides an excellent synapomorphy which separates this assemblage of spiders from the other dysderoid families. It had earlier been ascertained that some of the Tasmanian species described by Hickman (1930, 1932) as oonopids also possess this distinctive organ, but both Hickman and Forster included true oonopids along with the orsolobids and failed to appreciate that they were dealing with two quite separate groups.

A suspected association of the Australasian species with the Chilean genus *Orsolobus* Simon (1893) was confirmed by examination of Chilean collections housed in the American Museum of Natural History and the Museum of Comparative Zoology. As with *Subantarctia,* the strong superficial resemblance between the larger species of *Orsolobus* and some Mediterranean taxa led Simon to place the genus in the Dysderidae. The existence of a range of smaller and more oonopid-like Chilean relatives is documented below for the first time.

Cooke (1965) divided the known dysderid genera into four "tribes," establishing the tribe Orsolobini in a single sentence for "only the obscure South American genus *Orsolobus.*" He evidently recognized that *Orsolobus* is clearly distinct from all other dysderid genera but (unlike Brignoli, 1983) did not question its familial placement. Although the elevation of this group of spiders has been tentatively accepted for several years (see Forster, 1980), the present paper provides the first formal presentation of the taxon.

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ORSOLOBIDAE COOKE, NEW RANK

Orsolobini Cooke, 1965, p. 1027 (type genus *Orsolobus* Simon).

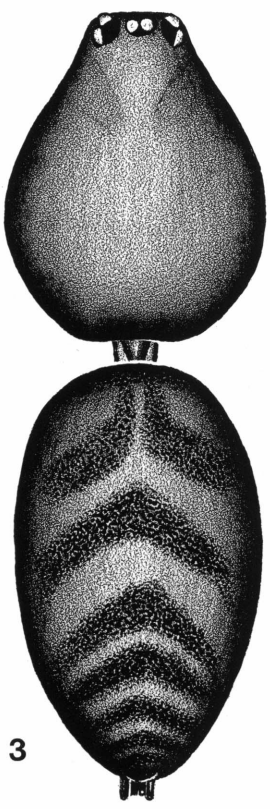
DIAGNOSIS: Orsolobids can be distinguished from all other spiders by the combined presence of a pair of posterior spiracles just behind the epigastric furrow and an elevated tarsal organ. The genera can also be separated from those of the Dysderidae and Segestriidae by the bipectinate claws and prominent onychium associated with paired proprioreceptor bristles on the tarsus, and from those of the Oonopidae by the presence of a claw on the female pedipalp, parallel endites, and (usually) teeth along the cheliceral fang furrow.

DESCRIPTION: Small to medium-size (total length less than 7 mm) ecribellate, haplogyne, araneomorph spiders (figs. 1–8). Six subcontiguous, subequal eyes (lost in *Anopsolobus*), anterior medians absent, eye group occupying most of cephalic width, posterior medians forming essentially straight row with anterior laterals. Carapace low, narrowed anteriorly. Chelicerae vertical, usually with two teeth on each margin; cheliceral gland opening through scattered pores on ventral surface opposite fang tip. Endites well developed, longer than wide, parallel, not converging anteriorly, bearing serrula consisting of single row of teeth; labium much longer than wide. Sternum broad, scutate, not much longer than wide.

Abdomen oval, clothed with short setae which leave cuticle clearly exposed. Six spinnerets, subequal, anteriors three-segmented; colulus usually present, setose. Female genitalia haplogyne, composed of two sections, one associated with anterior wall of bursa, one with posterior; anterior section usually with small, single, median receptaculum, but receptacula may be paired, multiple, or even absent, in which case anterior secretory gland

→

FIGS. 3–8. Dorsal view of cephalothorax and abdomen. 3. *Chileolobus eden,* new species, male. 4. Same, female. 5. *Osornolobus magallanes,* new species. 6. *Pounamuella australis* (Forster). 7. *Ascuta media* Forster. 8. *Duripelta borealis* Forster, male.



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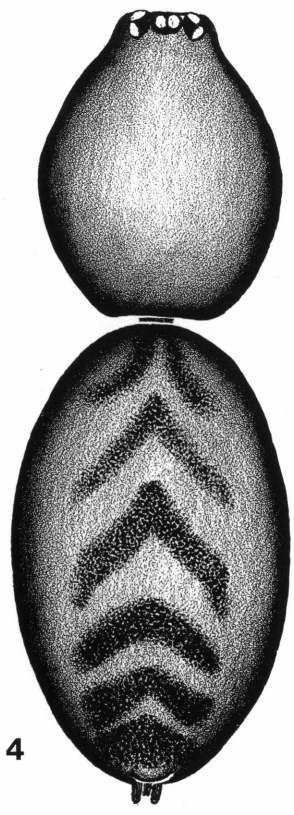

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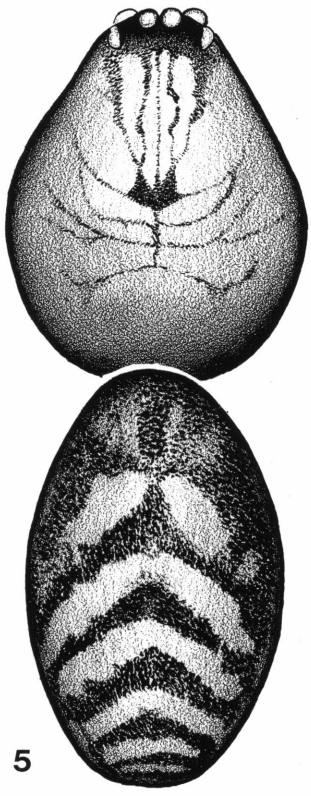

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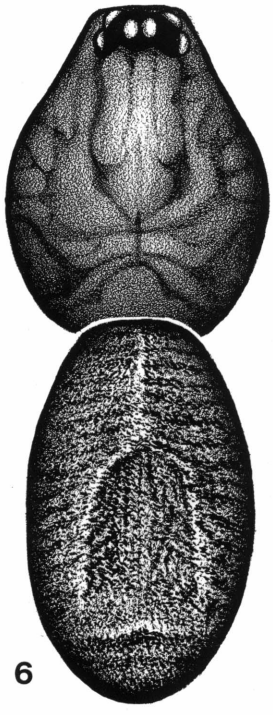

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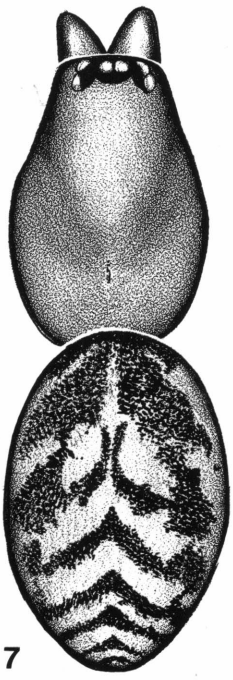

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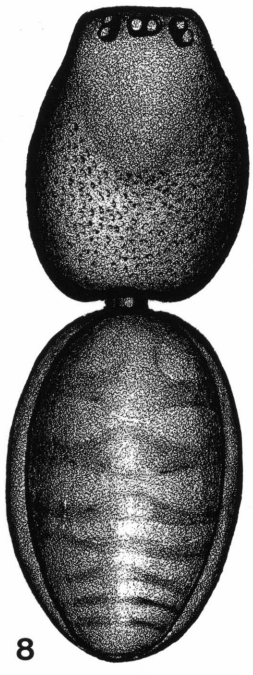

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discharges into lumen of median plate also serving for muscle attachment; posterior receptaculum single (absent in *Subantarctia*), often very large, always associated with secretory gland.

Legs long, slender, evenly clothed with long setae; spines sometimes present on femora, tibiae, and metatarsi. Two claws, flattened dorsoventrally, strongly pectinate on both margins, usually with proximal, expanded, tooth-bearing flange on outer margins, densely hirsute dorsally, situated on prominent onychium enabling claws to be bent back, contacting two erect sensilla (proprioreceptor bristles) on distodorsal surface of each tarsus; ventral surface of onychium often with dense claw tufts of spatulate hairs. Single subdistal trichobothrium on metatarsi, usually two on tibiae, none on tarsi. Tarsal organ raised, subdistal, often surmounted by distinctive cuticular lobes which may encircle receptor region; receptor lobes distinct, one often spiniform, sometimes greatly elongated.

Female palp with small, usually smooth claw. Male palp with no accessory processes on proximal segments; cymbium flattened ventrally, with round aperture on proximal surface; bulb basically pyriform; many species with simple, spiniform embolus but others have complex, tubular embolus with several terminal processes.

Respiratory system typical for Dysderoidea, with two closely spaced pairs of large spiracles, anterior pair leading into booklungs, posterior pair situated at about one-sixth of distance between epigastric furrow and spinnerets, leading into separate tracheal trunks providing tracheoles to both abdomen and cephalothorax.

DISTRIBUTION: Eastern and western Australia, Tasmania, New Zealand, Auckland and Campbell Islands, Chile, Argentina, and Falkland Islands.

NATURAL HISTORY: The orsolobids are vagrant hunters which in New Zealand are found mainly in the leaf litter or moss of rainforest, although there is also a less diverse fauna inhabiting tussock grassland and scrub in both lowland regions and above the bushline. Although there is apparently some overlap, particularly with some species of *Subantarctia*, in general the species found in each habitat are distinct.

Hickman (1932) reported finding *Tasmanoonops alipes* in purse retreats; fieldnotes for some of the Australian species we have examined show that this is the case for other species of *Tasmanoonops*. Similar retreats have been recorded for *Orsolobus* and this is also true for the New Zealand genus *Subantarctia*. The eggsac, which is constructed within the retreat and guarded by the female, is plano-convex and in *Subantarctia* at least is deposited at the far end of the retreat, away from the single entrance. The regular occurrence of both males and females in pitfall traps shows that they are not restricted to their retreats and actively hunt their prey.

The smaller forest species in New Zealand do not appear to construct retreats and the eggsac, similar in shape, is found under dead leaves or logs on the forest floor, usually in association with the female spider.

Two New Zealand species living in tussock grassland (one *Subantarctia* and one *Ascuta*) have been studied in some detail, and it is evident that they have regular, annual life cycles. The eggsacs are laid during the middle months of summer (December–February) and the spiderlings reach maturity in about ten or eleven months. The spiderlings are active over the winter months but rarely molt during those months. Some adults live for more than one season and so, even in the winter months, a few adult males and females may be found.

No forest species have been studied but, as with other litter spiders, adults appear to be abundant throughout the year. The spiders have been recorded feeding on collembola, amphipods, and insect larvae; occasionally, other smaller spiders are captured. Most species are solitary but *Duripelta* is locally abundant in forest litter.

THE SOUTH AMERICAN FAUNA

Although only three orsolobids have previously been described from the New World (all in the genus *Orsolobus*), the American fauna is diverse, particularly in Chile, and the 32 species treated below are assigned to five genera. These do not, however, consti-

tute the entire austral dysderoid fauna of America, for in addition to segestriids (see Beatty, 1970), at least one soft-bodied genus (*Orchestina*) and two hard-bodied genera (*Scaphiella* and another probably undescribed genus) of true oonopids have been taken in Chile. There are also three species of *Dysdera* described from South America (*D. bicolor* Taczanowski from Guyana, *D. magna* Keyserling from Uruguay, and *D. solers* Walckenaer from Colombia), all of which are probably synonyms of the cosmopolitan, synanthropic species *Dysdera crocata* C. L. Koch or otherwise misplaced; dysderids seem to be native only in the Mediterranean region, where the fauna is large and diverse.

All measurements presented below are in millimeters; abbreviations for eyes are standard for the Araneae.

ORSOLOBUS SIMON

Orsolobus Simon, 1893, p. 319 (type species by original designation *Segestria singularis* Nicolet).

DIAGNOSIS: *Orsolobus* resembles *Falklandia* in having an unmarked abdomen and a transverse duct between the posterior tracheal tubes, but differs in having spines on the tibiae of at least legs III and IV and in having dorsal and (usually) ventral subterminal lobes on the male palpal bulb.

DESCRIPTION: Moderate size (total length 3.1–4.7) orsolobids with dorsum of abdomen unmarked. Chelicerae usually with two promarginal and two retromarginal teeth, retromarginals more widely spaced than promarginals. Sternum produced anteriorly behind labium, truncated posteriorly, with long, triangular extensions to each coxa and elevations opposite coxae I–III. Colulus prominent, heavily setose, sometimes sclerotized. Female genitalia with prominent median rod originating from sclerotized plate anteriorly and sinuous posterior receptaculum. Spines present on tibiae and metatarsi III and IV (and purportedly I and II as well in *O. singularis*). Claws short, outer row of teeth usually restricted to large, lateral flange (figs. 9–13), with dense tufts of spatulate hairs. Tarsal organ relatively low, surmounted by numerous relatively short cuticular lobes, with one or two short receptor lobes; bothria with elevated ridge (figs. 14, 15); proprioreceptor bristles virtually smooth (fig. 17). Palpal claw of female smooth. Male palp with all segments stout, heavily sclerotized; coxa with tooth on anterodorsal surface near carapace margin; cymbium spoon-shaped, ventral surface flat with proximal circular fovea; bulb large, distally complex, with dorsal and (usually) ventral subterminal lobes. Posterior spiracles closer to each other than are pulmonary spiracles, linked by transverse groove, opening into wide atrium soon constricted to form large tracheal trunk extending directly forward before dividing into compact bunch of fine tracheoles immediately behind petiole; tracheoles extending through petiole, remaining as compact bunch until just above posterior region of thoracic nerve mass; bunch of tracheoles originating from small lobe on outer basal surface of main trunk serving abdomen; tracheal trunks joined by transverse duct.

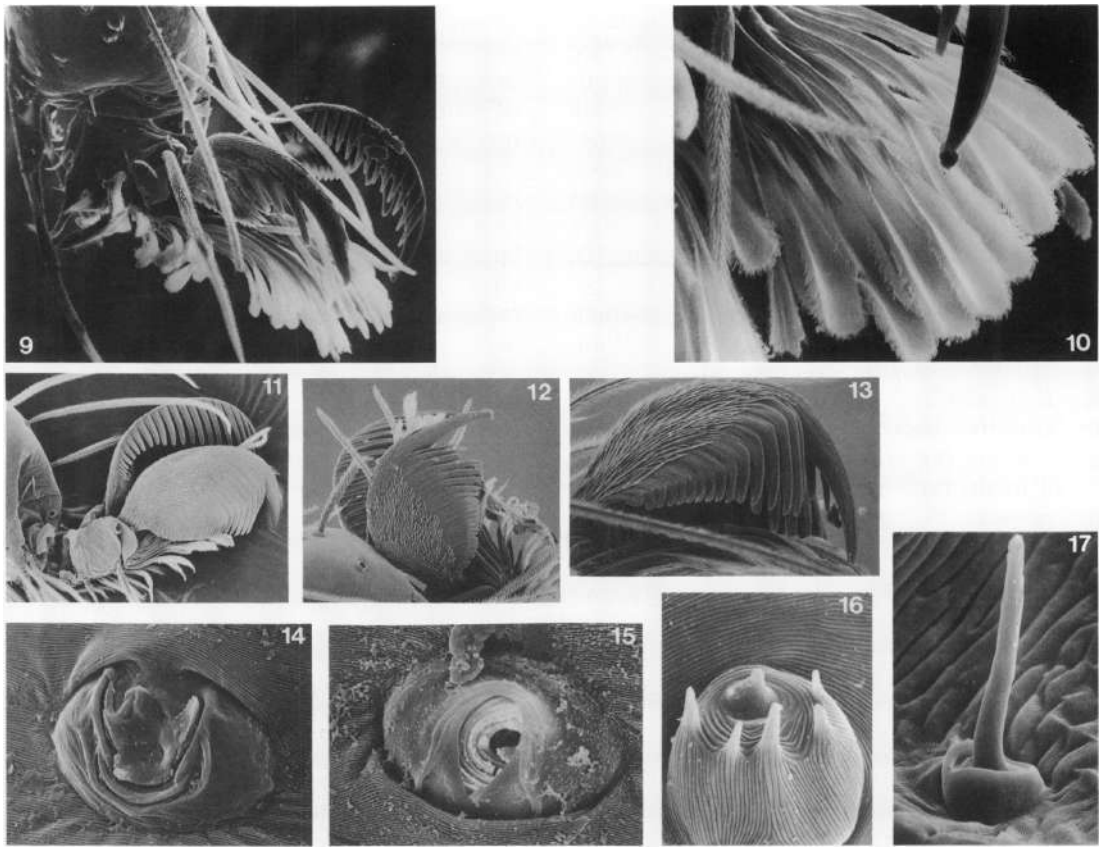
MISPLACED TAXA: *Orsolobus rumbolli* Schiapelli and Gerschman is transferred below to the new genus *Falklandia*.

SPECIES: The species-level taxonomy of *Orsolobus* is complicated by the fact that only one sex is known from each of the localities at which the genus has been collected. Because females of three different species have been taken from a small area within south-central Chile (including Malleco, Cautín, and Llanquihue provinces), it seems likely that the genus will prove to be as geographically diversified as is *Osornolobus* (see below). We have therefore chosen to describe the sexes separately (and run the risk of future synonymies) rather than attempt to match the sexes at random.

Orsolobus singularis (Nicolet)

Segestria singularis Nicolet, 1849, p. 346 (male holotype from Chile, no specific locality, lost).
Orsolobus singularis: Simon, 1893, p. 319, fig. 283.

DIAGNOSIS: We have seen no specimens of this species. On the basis of the descriptions by Nicolet and Simon, and of the illustration of the male palp by Simon, *O. singularis* is clearly closely related to *O. chelifer, O. pucatrihue,* and *O. pucara.* It differs from those



FIGS. 9–17. Tarsal structures of *Orsolobus*. 9, 10, 12, 15. *O.* sp. 11. *O. pucara*, new species. 13, 14, 16, 17. *O. plenus*, new species. 9–13. Claws and claw tufts. 14, 15. Bothria. 16. Tarsal organ from leg IV. 17. Proprioreceptor bristle.

species, however, in having spines on the anterior tibiae and metatarsi (according to Simon's key) and in lacking the ventral protuberance just proximal to the terminal elements of the male palpal bulb (according to Simon's figure).

MALE: Described by Nicolet (1849) and Simon (1893).

FEMALE: Unknown.

MATERIAL EXAMINED: None.

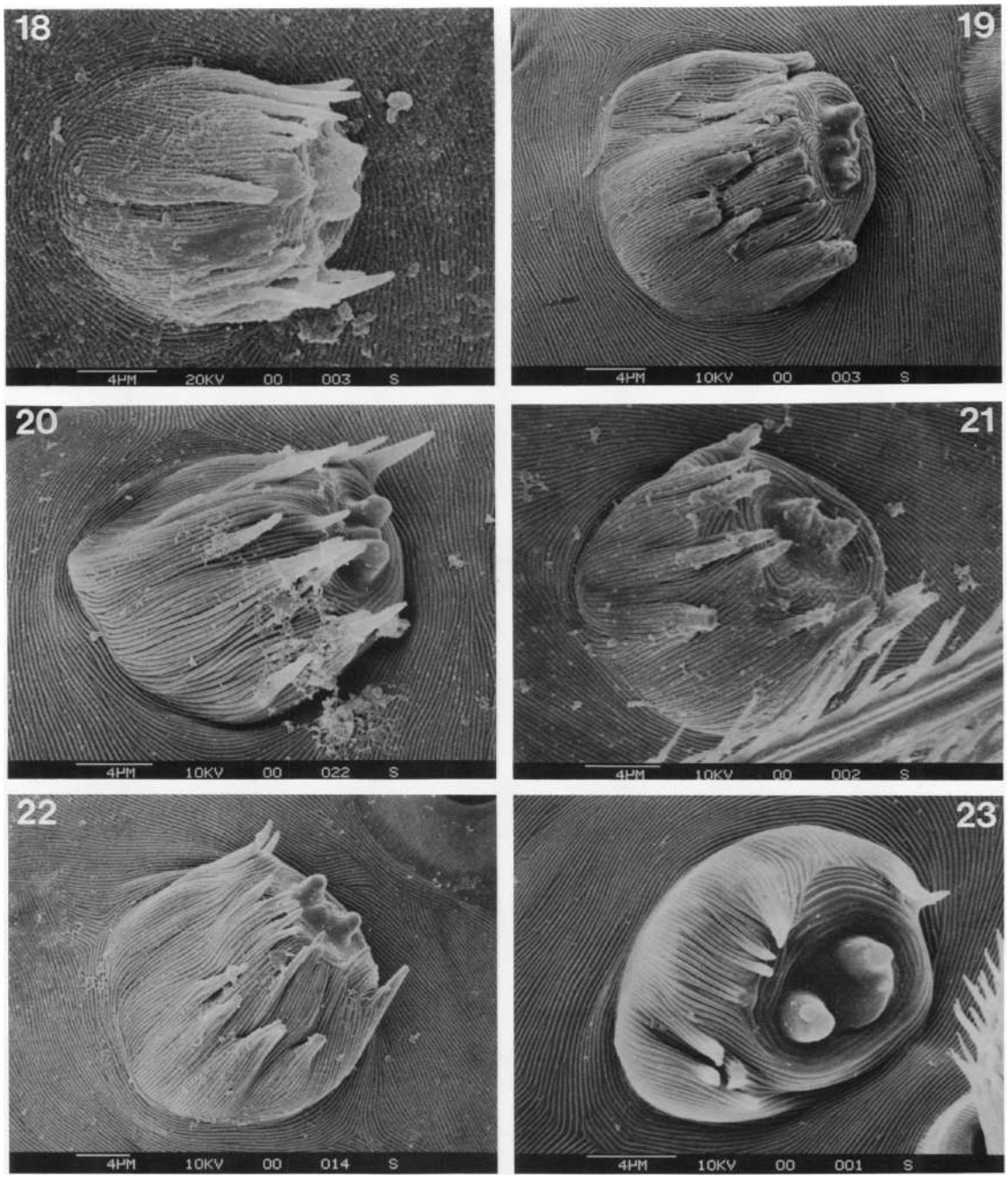
DISTRIBUTION: Known only from an unspecified locality in Chile.

Orsolobus chelifer Tullgren
Figures 18, 24, 25

Orsolobus chelifer Tullgren, 1902, p. 10, pl. 1, figs. 2a–c (two male syntypes from "upper part of the Aysen Valley," Aysén, Chile, in NRS, examined).

DIAGNOSIS: The sinuous ventral projection at the tip of the male palp (figs. 24, 25) is diagnostic.

MALE: Total length 3.11. Carapace 1.67 long, 1.26 wide. Abdomen 1.44 long, 0.72 wide. Syntypes in poor condition (shriveled, one lacking abdomen) but according to Tullgren carapace, chelicerae, mouthparts, and sternum reddish brown, abdomen pale brown with two small blackish spots on venter near spinnerets, and legs and palpi light brownish yellow. Eye length ratio, ALE:PME:PLE, 12:13:11; PME separated by almost two-thirds their width from ALE; PLE separated by almost three times the PME length. Chelicerae 0.65 long, with two promarginal and two widely spaced retromarginal teeth. Sternum longer than wide (12:11), narrowly truncated posteriorly. Leg spination (according to Tull-



FIGS. 18–23. Tarsal organ from leg I of *Orsolobus*. 18. *O. chelifer* Tullgren. 19. *O. pucatrihue*, new species. 20. *O. pucara*, new species. 21. *O. plenus*, new species. 22. *O. chilensis*, new species. 23. *O. schlingeri*, new species.

gren): tibiae: III p2, r1; IV v0-0-2, r0-0-1; metatarsi: III 3 distal; IV p0-1-0, 5 distal. Tarsal organ with about 10 cuticular lobes and two low receptor lobes (fig. 18). Claws relatively short, with large lateral flange occupying most of length.

FIGS. 24–29. Left male palpal bulb of *Orsolobus*. 24, 25. *O. chelifer* Tullgren. 26, 27. *O. pucatrihue*, new species. 28, 29. *O. pucara*, new species. 24, 26, 28. Prolateral view. 25, 27, 29. Retrolateral view.

	I	II	III	IV	Palp
Femur	1.76	1.81	1.48	1.76	0.62
Patella	0.65	0.58	0.49	0.52	0.38
Tibia	1.70	1.69	1.06	1.39	0.48
Metatarsus	1.69	1.68	1.31	1.80	—
Tarsus	0.56	0.56	0.47	0.43	0.43
Total	6.36	6.32	4.81	5.90	1.91

Palpal bulb with dorsal lobe, ventral protuberance, and complex embolic division bearing sinuous ventral projection (figs. 24, 25).

FEMALE: Unknown.

MATERIAL EXAMINED: Only the syntypes, collected in January 1897, by P. Dusén.

DISTRIBUTION: Known only from Aysén, Chile.

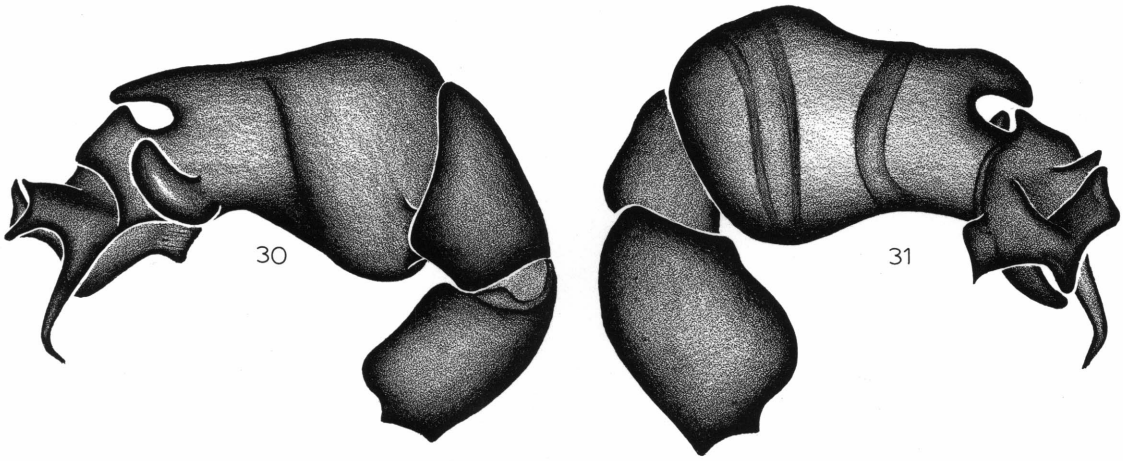
Orsolobus pucatrihue, new species
Figures 19, 26, 27

TYPE: Male holotype from Pucatrihue, Osorno, Chile (March 26–28, 1968; L. E. Peña), deposited in MCZ.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: The male palp resembles that of *O. pucara* but has differently shaped terminal elements (figs. 26, 27).

MALE: Total length 4.12. Carapace 1.91 long, 1.32 wide. Abdomen 2.23 long, 1.17 wide. Carapace brownish orange, darkest anteriorly, ocular area with long, dark setae, margins only slightly darkened; chelicerae brownish orange; mouthparts brownish or-



FIGS. 30, 31. Right male palp of *Orsolobus plenus,* new species. 30. Prolateral view. 31. Retrolateral view.

ange, sternum yellow; abdomen creamy white, unmarked; legs and palpi yellow. Eye length ratio, ALE:PME:PLE, 7:10:9; PME separated by one-fourth their width from ALE; PLE separated by almost three times the PME length. Chelicerae 0.82 long, left chelicera with three promarginal and two widely spaced retromarginal teeth, right one with two promarginal and one retromarginal. Sternum longer than wide (14:11), narrowly truncated posteriorly. Leg spination: tibiae: III p1-0-1, v0-0-1p; IV v0-0-2; metatarsi: III p0-0-1, v0-0-2; IV p0-0-1, v1p-1p-2, r0-0-1. Tarsal organ with about nine short, thick cuticular lobes and two short, unequal receptor lobes (fig. 19). Claws as in *O. chelifer.*

	I	II	III	IV	Palp
Femur	1.91	1.96	1.53	1.96	0.68
Patella	0.71	0.61	0.59	0.73	0.38
Tibia	1.80	1.74	1.19	1.66	0.43
Metatarsus	1.80	1.91	1.51	1.96	—
Tarsus	0.57	0.53	0.47	0.58	0.54
Total	6.79	6.75	5.29	6.89	2.03

Palpal bulb with dorsal lobe, ventral protuberance, and complex embolic division with two closely approximate ventral ridges at tip (figs. 26, 27).

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Osorno, Chile.

Orsolobus pucara, new species
Figures 11, 20, 28, 29

TYPE: Male holotype from Pucará, Lago Lácar, 23 km west of San Martín de los Andes, Neuquén, Argentina (January 25, 1972; L. H. Herman), deposited in AMNH.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: The male palp resembles that of *O. pucatrihue* but has differently shaped terminal elements (figs. 28, 29).

MALE: Total length 4.57. Carapace 1.91 long, 1.43 wide. Abdomen 2.61 long, 1.54 wide. Coloration as in *O. pucatrihue.* Eye length ratio, ALE:PME:PLE, 3:4:4; PME separated by one-third their width from ALE; PLE separated by three times the PME length. Chelicerae 0.89 long, teeth as in *O. chelifer.* Sternum longer than wide (6:5), broadly truncated posteriorly. Leg spination: tibiae: III p1-0-1; IV v0-0-2; metatarsi: III p0-0-1, v0-0-2; IV p0-0-1, v1p-1p-3, r0-0-1. Tarsal organ with about nine relatively long, narrow cuticular lobes and two rounded receptor lobes (fig. 20). Claws as in *O. chelifer.*

	I	II	III	IV	Palp
Femur	2.04	1.92	1.62	2.10	0.73
Patella	0.79	0.82	0.65	0.79	0.37
Tibia	1.93	2.01	1.28	1.71	0.47
Metatarsus	2.05	1.92	1.62	2.15	—
Tarsus	0.65	0.62	0.47	0.60	0.58
Total	7.46	7.29	5.64	7.35	2.15

Palpal bulb with dorsal lobe, ventral protuberance, and complex embolic division with two well separated ventral ridges at tip (figs. 28, 29).

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: One male taken with the holotype (AMNH).

DISTRIBUTION: Known only from Neuquén, Argentina.

Orsolobus plenus, new species
Figures 13, 14, 16, 17, 21, 30, 31

TYPE: Male holotype from Alto Vilches, Talca, Chile (October 17–24, 1964; L. E. Peña), deposited in MCZ.

ETYMOLOGY: The specific name refers to the stoutness of the palpal segments.

DIAGNOSIS: The short, terminal elements of the male palpal bulb (figs. 30, 31) are diagnostic.

MALE: Total length 3.62. Carapace 1.54 long, 1.19 wide. Abdomen 1.94 long, 1.20 wide. Coloration as in *O. pucatrihue*. Eye length ratio, ALE:PME:PLE, 6:8:7; PME separated by one-fourth their width from ALE; PLE separated by almost three times the PME length. Chelicerae 0.68 long, teeth as in *O. chelifer*. Sternum longer than wide (7:6), broadly truncated posteriorly. Leg spination: tibiae: III p1-0-1, v0-0-1p, r0-0-1; IV v0-0-2; metatarsi: III p0-0-1, v0-0-2, r0-0-1; IV p1-1-1, v0-0-2, r0-1-1. Tarsal organ with about 12 narrow, well separated cuticular lobes and two rounded receptor lobes on leg I (fig. 21), with only five cuticular lobes and one receptor lobe on leg IV (fig. 16). Claws as in *O. chelifer*.

	I	II	III	IV	Palp
Femur	1.78	1.86	1.46	1.80	0.58
Patella	0.67	0.66	0.50	0.61	0.50
Tibia	1.66	1.67	1.17	1.55	0.45
Metatarsus	1.73	1.76	1.35	1.86	—
Tarsus	0.61	0.61	0.48	0.50	0.28
Total	6.45	6.56	4.96	6.32	1.81

Palpal bulb with prominent dorsal lobe almost meeting embolar base, ventral protuberance shifted prolaterally, and short, complex embolic division (figs. 30, 31).

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Talca, Chile.

Orsolobus montt, new species
Figure 39

TYPE: Female holotype from Río Blanco, Puerto Montt, Llanquihue, Chile (January 24–29, 1983; G. Arriagada S.), deposited in MNS.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: The flanged platform attached to the median rod of the anterior portion of the internal female genitalia (fig. 39) is diagnostic.

MALE: Unknown.

FEMALE: Total length 4.68. Carapace 1.93 long, 1.37 wide. Abdomen 2.38 long, 1.64 wide. Coloration as in *O. pucatrihue*. Eye length ratio, ALE:PME:PLE, 11:18:17; PME separated by one-third their width from ALE; PLE separated by three times the PME length. Chelicerae 0.83 long, with teeth as in *O. chelifer*. Sternum longer than wide (29:25), narrowly truncated posteriorly. Leg spination: tibiae: III p0-1-1, v0-0-2, r0-0-1; IV v0-0-2, r0-0-1; metatarsi: III p0-1-1, v0-1r-2, r0-1-1; IV p1-1-1, v1p-1p-2, r1-1-1. Tarsal organ not examined. Claws with one large tooth on outer row distal to lateral flange.

	I	II	III	IV	Palp
Femur	1.72	1.73	1.40	1.82	0.56
Patella	0.65	—	0.58	0.65	0.23
Tibia	1.53	—	0.97	1.40	0.33
Metatarsus	1.56	—	1.34	1.66	—
Tarsus	0.61	—	0.47	0.56	0.73
Total	6.07	—	4.76	6.09	1.85

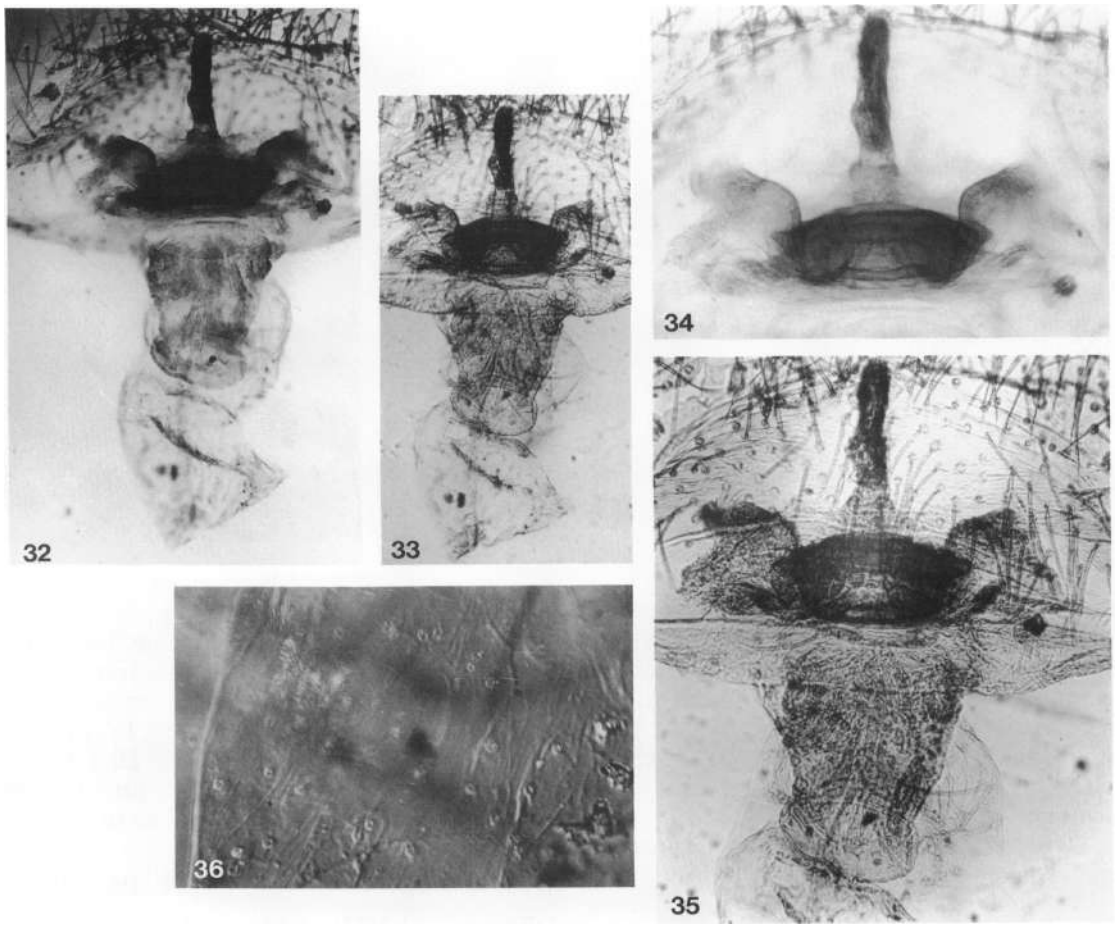
Palpal tibia without spines, tarsus with one prolateral and two distal ventral spines; palpal claw long, smooth. Internal genitalia with median rod of anterior portion bearing subdistal flanged platform, originating from unarched plate (fig. 39).

OTHER MATERIAL EXAMINED: One female taken with the holotype (MNS).

DISTRIBUTION: Known only from Llanquihue, Chile.

Orsolobus chilensis, new species
Figures 22, 32–36, 40

TYPE: Female holotype from an elevation of 600–700 m at Chacamo, Cautín, Chile



FIGS. 32–36. Internal female genitalia of *Orsolobus chilensis*, new species. 32–35. Anterior elements. 36. Posterior receptaculum, showing scattered pores.

(February 17–23, 1981; L. E. Peña), deposited in AMNH.

ETYMOLOGY: The specific name refers to the Chilean distribution.

DIAGNOSIS: The four basal spurs on the median rod of the anterior portion of the internal female genitalia (fig. 40) are diagnostic.

MALE: Unknown.

FEMALE: Total length 4.64. Carapace 1.91 long, 1.42 wide. Abdomen 2.75 long, 1.67 wide. Coloration as in *O. pucatrihue*. Eye length ratio, ALE:PME:PLE, 13:18:16; PME separated by one-third their width from ALE; PLE separated by three times the PME length. Chelicerae 0.83 long, with teeth as in *O. chelifer*. Sternum longer than wide (19:11), broadly truncated posteriorly. Leg spination: tibiae: III p1-0-1, r0-0-1; IV v0-1p-2, r0-0-1; metatarsi: III p1-1-1, v0-0-2, r1-0-1; IV p1-1-1, v1p-1p-3, r1-1-1. Tarsal organ with about 15 short, narrow cuticular lobes and two rounded receptor lobes (fig. 22). Claws with two large teeth on outer row distal to lateral flange.

	I	II	III	IV	Palp
Femur	1.70	1.67	1.40	1.85	0.57
Patella	0.70	0.63	0.54	0.63	0.29
Tibia	1.53	1.55	0.90	1.35	0.33
Metatarsus	1.55	1.52	1.20	1.69	—
Tarsus	0.62	0.59	0.50	0.57	0.70
Total	6.10	5.96	4.54	6.09	1.89

Palpal tibia with strong bristles but no spines,

FIGS. 37, 38. Internal female genitalia of *Orsolobus schlingeri*, new species.

tarsus with one prolateral and two distal ventral spines; palpal claw thin, smooth. Internal genitalia with anterior median rod bearing four basal spurs (fig. 40), originating from only slightly arched plate (figs. 32–35); posterior receptaculum relatively wide, with scattered pores (fig. 36).

OTHER MATERIAL EXAMINED: Three females taken with the holotype (AMNH).

DISTRIBUTION: Known only from Cautín, Chile.

Orsolobus schlingeri, new species
Figures 23, 37, 38, 41

TYPE: Female holotype from an elevation of 1220 m in the Parque Nacional Nahuelbuta, Malleco, Chile (Febraury 12, 1967; E. I. Schlinger), deposited in UCB, on indefinite loan to CAS.

ETYMOLOGY: The specific name is a patronym in honor of the collector of the holotype.

DIAGNOSIS: The highly arched plate of the anterior portion of the internal female genitalia (figs. 37, 38, 41) is diagnostic.

MALE: Unknown.

FEMALE: Total length 3.82. Carapace 1.44 long, 1.17 wide. Abdomen 2.30 long, 1.56 wide. Coloration as in *O. pucatrihue*. Eye length ratio, ALE:PME:PLE, 10:13:13; PME separated by one-third their width from ALE; PLE separated by slightly more than three times the PME length. Chelicerae 0.61 long, with teeth as in *O. chelifer*. Sternum longer than wide (15:14), broadly truncated posteriorly. Leg spination: tibiae III, IV p1-1-0, v0-0-2, r1-1-0; metatarsi III, IV p0-1-1, v0-0-2, r0-1-1. Tarsal organ with about eight cuticular lobes (fig. 23). Claws as in *O. chilensis*.

	I	II	III	IV	Palp
Femur	1.33	1.32	1.02	1.39	0.43
Patella	0.50	0.47	0.41	0.54	0.22
Tibia	1.18	1.10	0.79	1.12	0.27
Metatarsus	1.15	1.11	0.88	1.25	–
Tarsus	0.51	0.52	0.43	0.47	0.52
Total	4.67	4.52	3.53	4.77	1.44

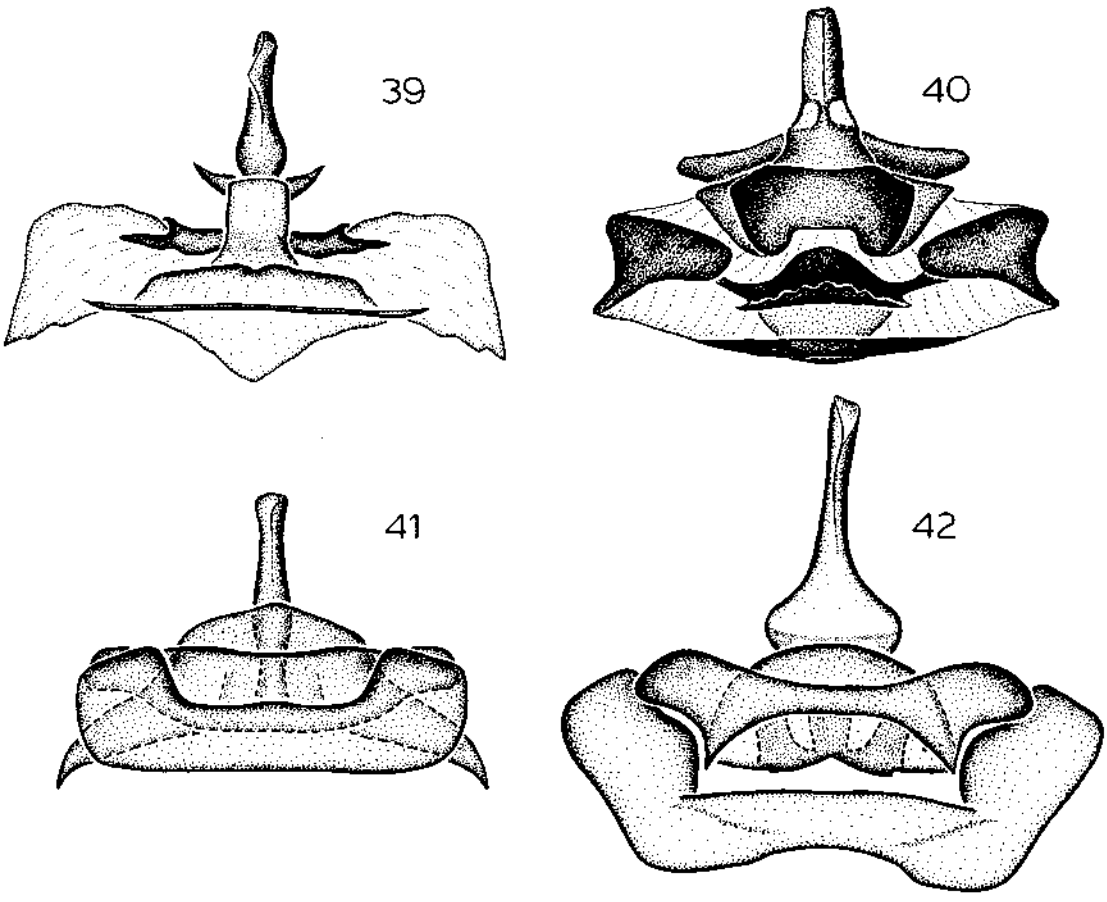
Palpal tibia with one prolateral spine, tarsus with one prolateral and two distal ventral spines; palpal claw sinuous, smooth. Internal genitalia with long median rod originating from highly arched plate (figs. 37, 38, 41); posterior receptaculum relatively narrow, with scattered pores.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Malleco, Chile.

Orsolobus mapocho, new species
Figure 42

TYPE: Female holotype taken in a Barber trap at an elevation of 550–800 m in the Valle



FIGS. 39–42. Anterior portion of internal female genitalia of *Orsolobus*. 39. *O. montt*, new species. 40. *O. chilensis*, new species. 41. *O. schlingeri*, new species. 42. *O. mapocho*, new species.

del Río Mapocho, Santiago, Chile (April–December 1959; W. Noodt), deposited in MNS.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

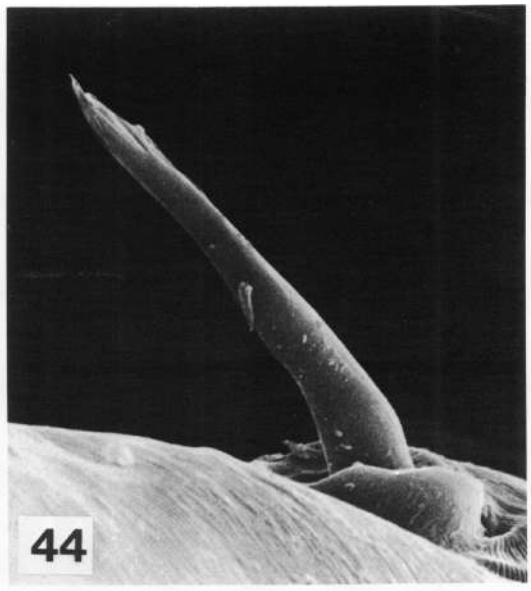
DIAGNOSIS: The large pair of basal spurs on the median rod of the anterior portion of the internal female genitalia (fig. 42) is diagnostic.

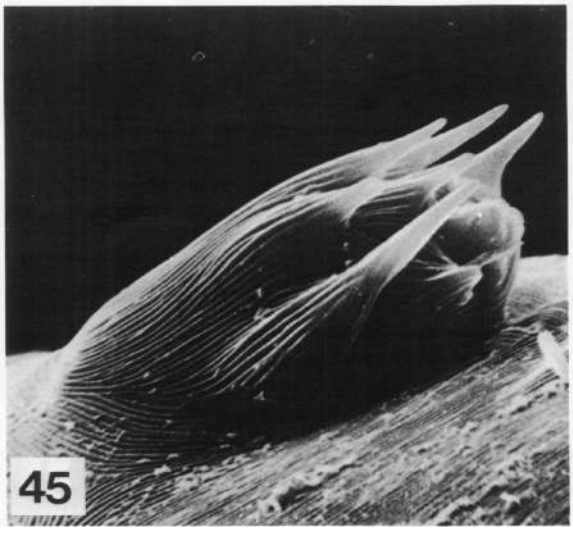
MALE: Unknown.

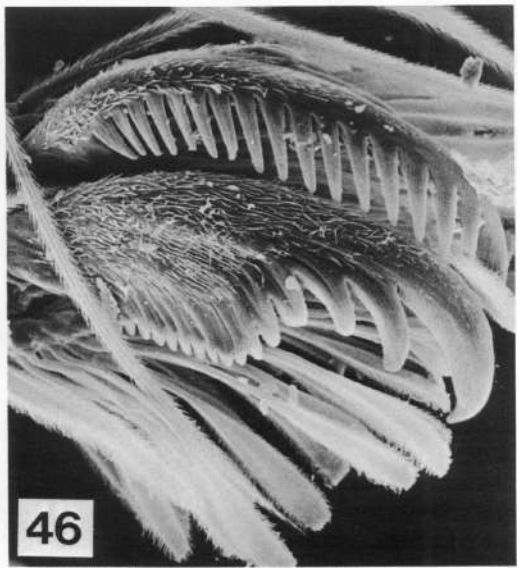
FEMALE: Total length 4.07. Carapace 1.80 long, 1.38 wide. Abdomen 2.45 long, 1.33 wide. Coloration unknown (holotype in poor condition, entirely blackened). Eye length ratio, ALE:PME:PLE, 11:14:10; PME separated by half their width from ALE; PLE separated by slightly more than three times the PME length. Chelicerae 0.74 long, with teeth as in *O. chelifer*. Sternum longer than wide (27:23), broadly truncated posteriorly. Leg spination undetectable on single blackened leg IV present on holotype. Tarsal organ not examined. Claws as in *O. chilensis*.

	I	II	III	IV	Palp
Femur	—	—	—	1.87	0.50
Patella	—	—	—	0.65	0.25
Tibia	—	—	—	1.66	0.36
Metatarsus	—	—	—	1.66	—
Tarsus	—	—	—	0.50	0.70
Total	—	—	—	6.34	1.81

Palpal tibia with two prolateral spines, tarsus with two prolateral and two distal ventral spines; palpal claw short, sinuous, smooth. Internal genitalia with anterior median rod







FIGS. 43–46. *Falklandia rumbolli* (Schiapelli and Gerschman). 43. Right male palp, distal view. 44. Proprioreceptor bristle. 45. Tarsal organ. 46. Tarsal claws and claw tuft.

bearing pair of large basal spurs, originating from arched plate (fig. 42).

OTHER MATERIAL EXAMINED: None.

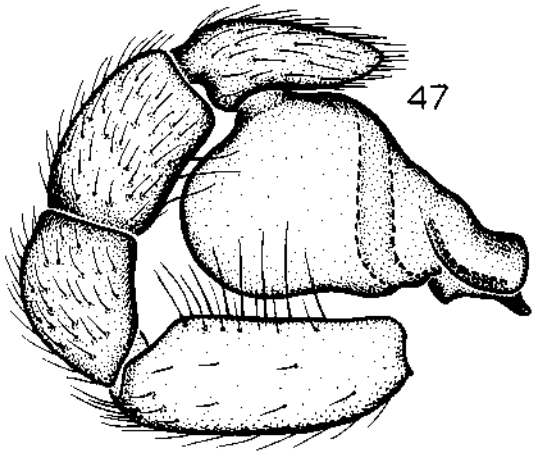
DISTRIBUTION: Known only from Santiago, Chile.

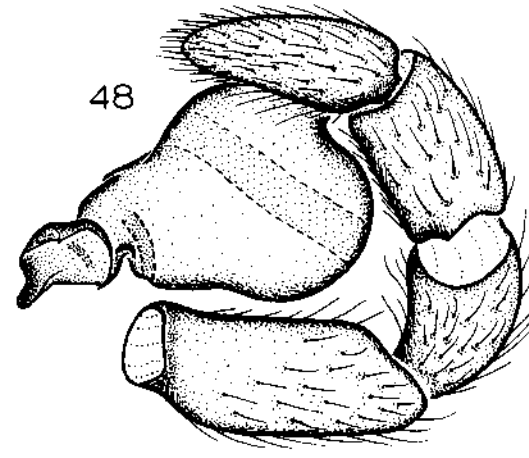
FALKLANDIA, NEW GENUS

TYPE SPECIES: *Orsolobus rumbolli* Schiapelli and Gerschman (1974).

ETYMOLOGY: The generic name is taken from the type locality, and is feminine in gender.

DIAGNOSIS: *Falklandia* resembles *Orsolobus* in having an unmarked abdomen and a transverse duct between the posterior tracheal trunks but differs in lacking spines on the tibiae and subterminal lobes on the male palpal bulb.





FIGS. 47, 48. *Falklandia rumbolli* (Schiapelli and Gerschman), left male palp. 47. Prolateral view. 48. Retrolateral view.

DESCRIPTION: Relatively large (total length 4.6–6.2) orsolobids with dorsum of abdomen unmarked. Chelicerae with two promarginal and two retromarginal teeth. Colulus distinct, strongly setose. Female genitalia with well-developed posterior receptaculum (relatively smaller than in *Orsolobus* and *Tasmanoonops*) enclosed within very large secretory gland; secretory cells discharge into receptaculum through numerous single pores spread over whole wall of sac. Spines present only distally on metatarsi III and IV. Claws short, with outer row of teeth extending beyond moderately large lateral flange (fig. 46). Tarsal organ relatively low, surmounted by cuticular lobes, with small receptor lobes (fig. 45); proprioreceptor bristles smooth, with few distal processes (fig. 44). Palpal claw of female smooth. Male palp with short, tubular embolus flanked by strong bifurcate process (fig. 43). Posterior tracheal trunks linked by narrow transverse duct.

Falklandia rumbolli
(Schiapelli and Gerschman),
new combination
Figures 43–50

Orsolobus rumbolli Schiapelli and Gerschman, 1974, p. 83, figs. 47–50 (male holotype from Fox Bay East, West Falkland, Falkland Islands, in MACN, not examined). Usher, 1983, p. 576.

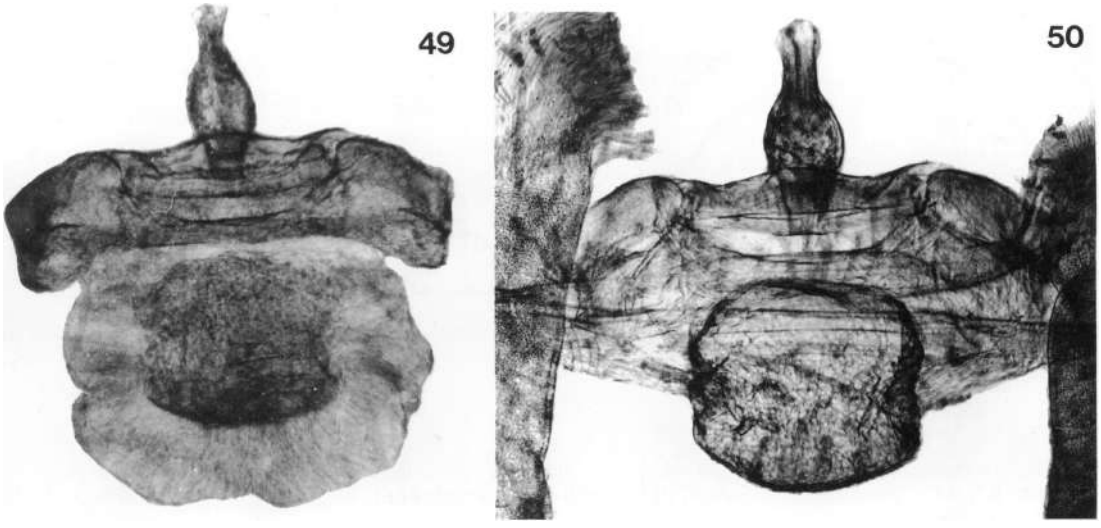
DIAGNOSIS: With the characters of the genus.

MALE: Total length 4.62. Carapace 1.91 long, 1.46 wide. Abdomen 2.86 long, 1.53 wide. Carapace light orange, darkest anteriorly, ocular area with long, light setae, margins only slightly darkened; chelicerae light orange; mouthparts and sternum yellow; abdomen creamy white, unmarked; legs and palpi light yellow. Eye length ratio, ALE:PME: PLE, 11:13:13; PME separated by one-third their width from ALE; PLE separated by three times the PME length. Chelicerae 0.83 long, with two promarginal and two widely spaced retromarginal teeth. Sternum longer than wide (31:24), narrowly truncated posteriorly. Leg spination: metatarsi III, IV p0-0-1, v0-0-2, r0-0-1. Tarsal organ with about eight cuticular lobes (fig. 45). Claws with two teeth of outer row distal to lateral flange (fig. 46).

	I	II	III	IV	Palp
Femur	1.76	—	1.31	1.84	0.54
Patella	0.81	—	0.60	0.73	0.32
Tibia	1.46	—	1.01	1.37	0.37
Metatarsus	1.66	—	1.33	1.81	—
Tarsus	0.61	—	0.58	0.61	0.41
Total	6.30	—	4.83	6.36	1.64

Palpal bulb without subterminal lobes, distally bifid (figs. 43, 47, 48).

FEMALE: As in male, except for the following. Total length 6.12. Carapace 2.38 long, 1.71 wide. Abdomen 3.66 long, 2.25 wide. Eye length ratio, 3:4:4; PME separated by half their width from ALE; PLE separated by al-



FIGS. 49, 50. *Falklandia rumbolli* (Schiapelli and Gerschman), internal female genitalia. 49. Genitalia with the secretory gland enclosing the posterior receptaculum. 50. Secretory gland removed to expose the posterior receptaculum.

most four times the PME length. Chelicerae 1.08 long. Sternum longer than wide (39:28), pointed posteriorly. Leg spination as in male (leg IV missing).

	I	II	III	IV	Palp
Femur	2.05	2.04	1.62	—	0.71
Patella	0.86	0.81	0.72	—	0.32
Tibia	1.71	1.62	1.17	—	0.41
Metatarsus	1.87	1.80	1.60	—	—
Tarsus	0.61	0.61	0.58	—	0.83
Total	7.10	6.88	5.69	—	2.27

Palpal tibia without spines, tarsus with one prolateral and two distal ventral spines; palpal claw sinuous, smooth. Internal genitalia with very large posterior secretory gland (figs. 49, 50).

MATERIAL EXAMINED: Male and female paratypes from the type locality (MACN).

DISTRIBUTION: Known only from the Falkland Islands: West Falkland, East Falkland, Kidney Island, and Beauchêne Island (Schiapelli and Gerschman, 1974; Usher, 1983).

DISCUSSION: This species is of considerable interest because the posterior section of the female genitalia is intermediate between the bursal secretory gland organization found in *Subantarctia* and the large receptaculum present in both *Orsolobus* and *Tasmanoonops*. Furthermore, the retention of a large secretory gland associated with numerous closely spaced simple secretory pores is in strong contrast to the development which has taken place in the latter two genera, where the secretory cell layer is thin and the cells discharge either through lobes which project into the lumen or widely separated groups of pores.

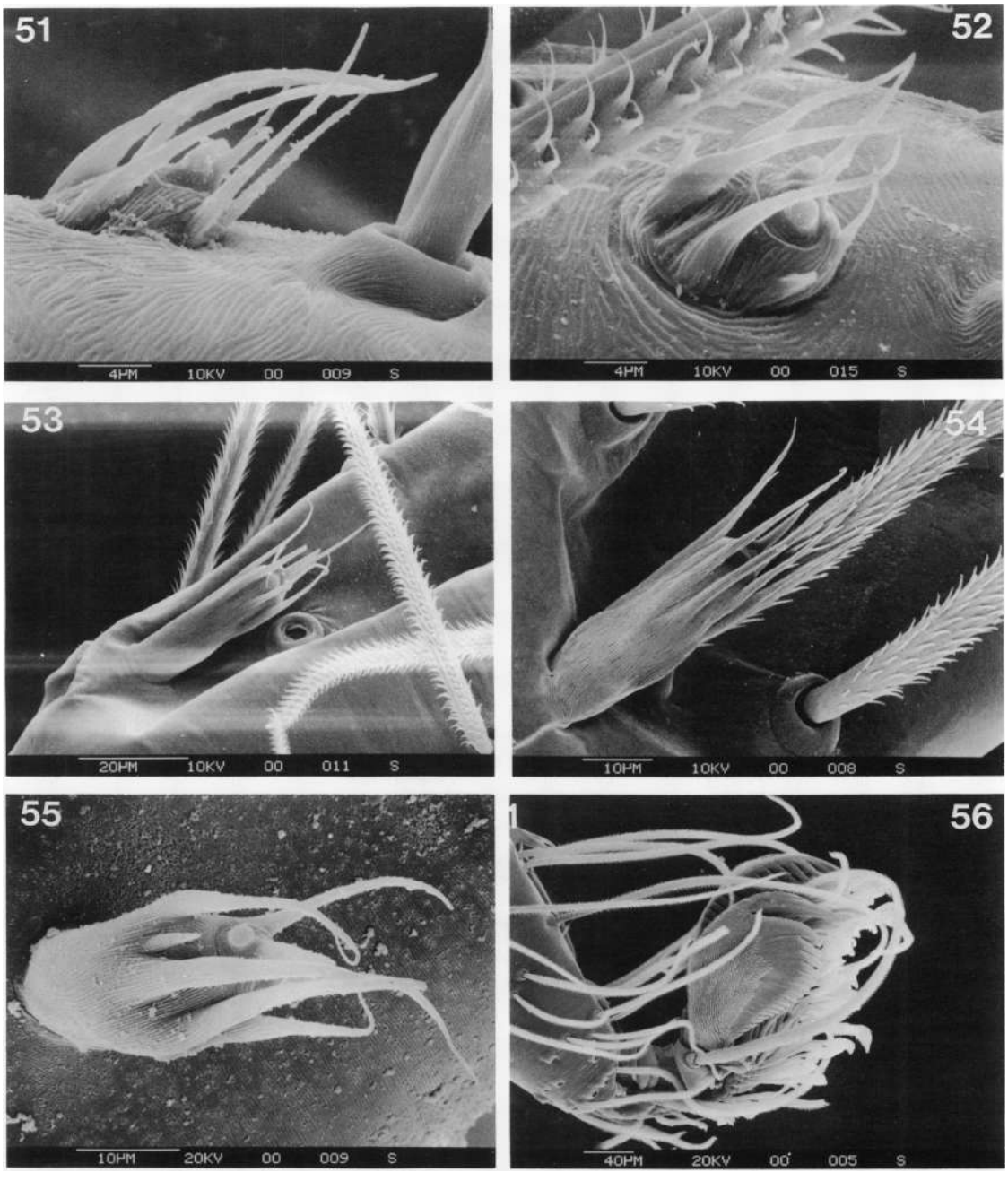
MALLECOLOBUS, NEW GENUS

TYPE SPECIES: *Mallecolobus malacus*, new species.

ETYMOLOGY: The generic name refers to the occurrence of these spiders in Malleco Province, Chile, and is masculine in gender.

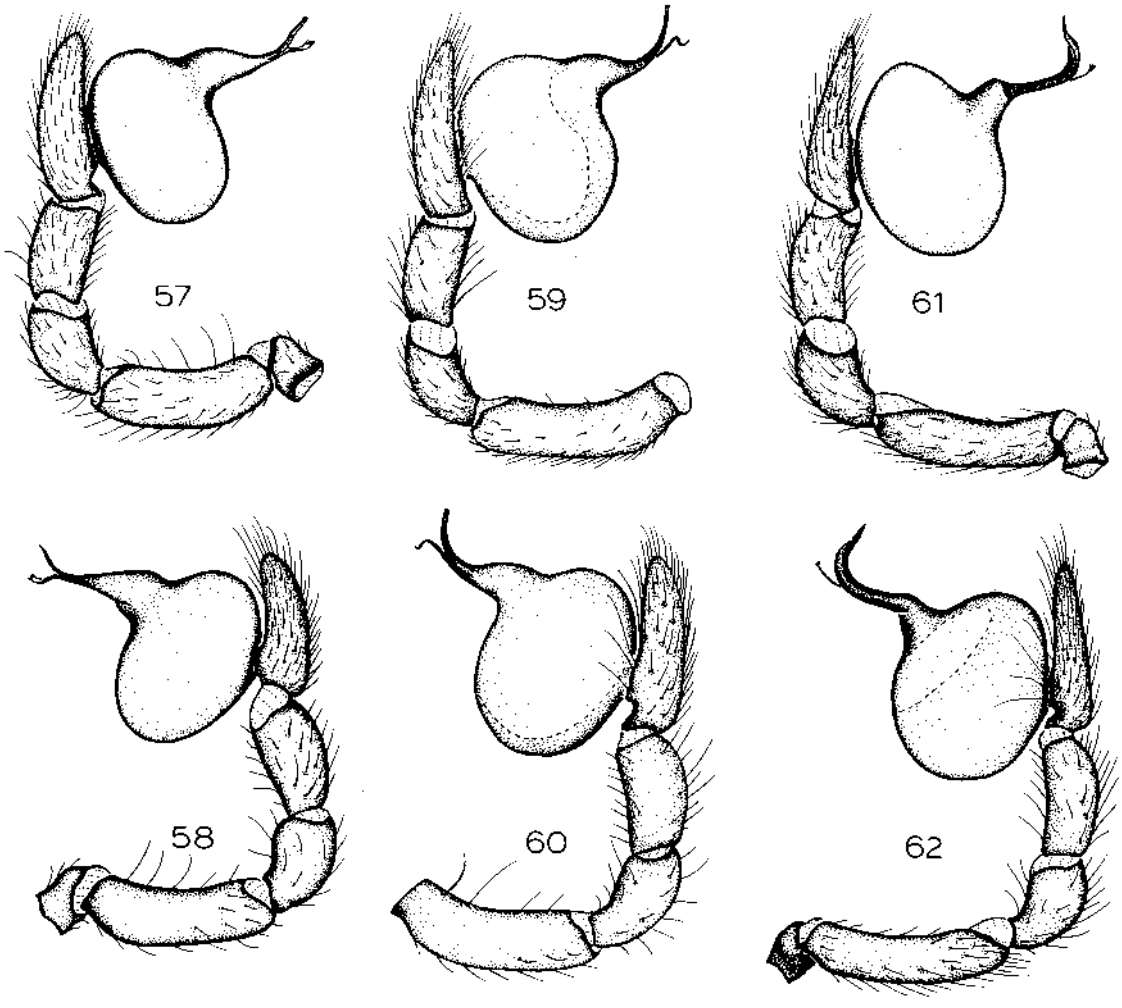
DIAGNOSIS: *Mallecolobus* resembles *Pounamuella* and *Hickmanolobus* in having the dorsum of the abdomen uniformly pigmented but differs in having spines on tibiae and metatarsi III and IV and in having the receptor spine of the tarsal organ moderately elongated (in *Pounamuella* the receptor spine is enormously elongated, whereas in *Hickmanolobus* it is not elongated at all).

DESCRIPTION: Moderate size (total length 3.2–6.6) orsolobids with dorsum of abdomen covered with purple pigment (sometimes absent over heart or along hairline posterior



FIGS. 51–56. Tarsal structures of *Mallecolobus*. 51. *M. malacus*, new species. 52. *M. pedrus*, new species. 53. *M. sanus*, new species, male. 54, 56. Same, female. 55. *M. maullin*, new species. 51–55. Tarsal organ from leg I. 56. Claws.

chevrons). Chelicerae with two promarginal and two retromarginal teeth; retromarginal teeth more widely spaced than promarginals. Sternum produced anteriorly behind labium, broadly truncated posteriorly, with long, triangular sclerotized extensions to each coxa and elevations opposite coxae I–III. Colulus small, triangular. Female genitalia with an-



FIGS. 57–62. Left male palp of *Mallecolobus*. 57, 58. *M. malacus*, new species. 59, 60. *M. pedrus*, new species. 61, 62. *M. sanus*, new species. 57, 59, 61. Prolateral view. 58, 60, 62. Retrolateral view.

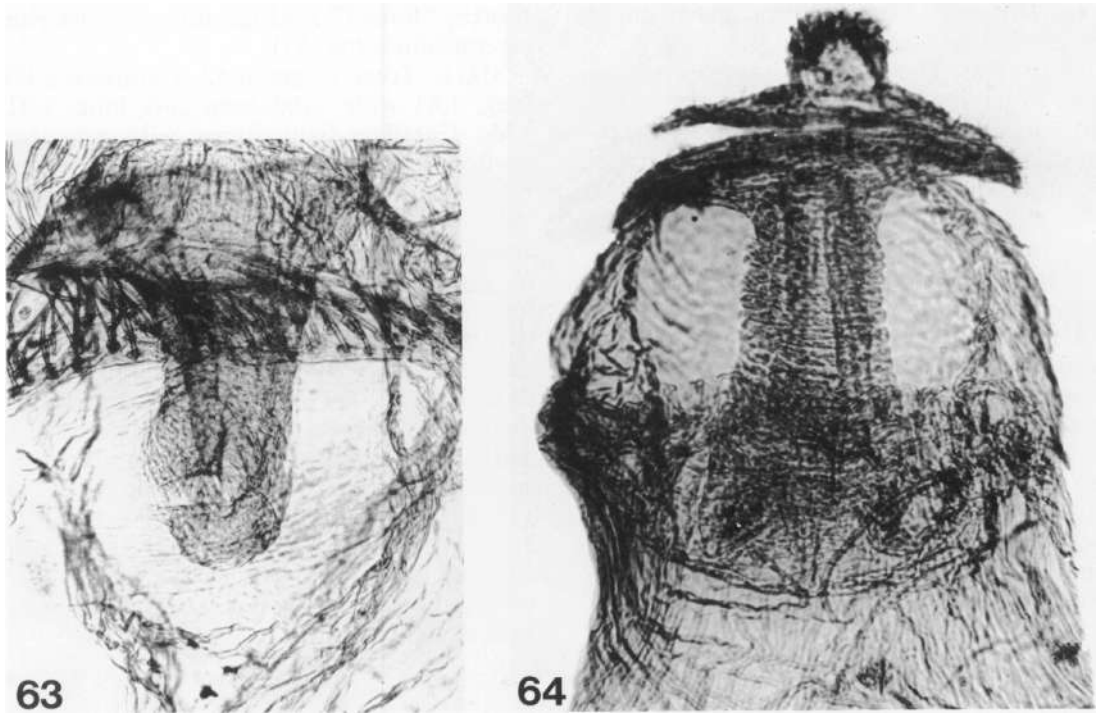
terior portion reduced to plate, posterior portion with funnel-shaped sclerotization leading into large membranous receptaculum. Spines present on tibiae and metatarsi III and IV. Claws short, outer teeth restricted to large, lateral flange extending almost to tip (fig. 56). Tarsal organ moderately to greatly elevated, surmounted by cuticular lobes of variable length; receptor spine moderately elongated; proprioreceptor bristles strongly divaricated distally (fig. 56). Palpal claw of female with denticle. Male palp with long tarsus, globose bulb, and two terminal elements. Posterior spiracles closer to each other than are pulmonary spiracles, not interconnected.

Mallecolobus malacus, new species
Figures 51, 57, 58

TYPE: Male holotype taken in a window trap at an elevation of 1350 m in a *Nothofagus dombeyi* and *Araucaria* forest 12 km east of Malalcahuello, Malleco, Chile (December 13–31, 1982; A. Newton and M. Thayer), deposited in AMNH.

ETYMOLOGY: The specific name is an arbitrary combination of letters.

DIAGNOSIS: This species resembles *M. pedrus* in having a relatively low tarsal organ, but can be distinguished by the uniformly long cuticular lobes on the tarsal organ (fig.



FIGS. 63, 64. Internal female genitalia of *Mallecolobus*. 63. *M. sanus*, new species. 64. *M. maullin*, new species.

51) and the larger embolar base and distally expanded ventral embolar projection (figs. 57, 58).

MALE: Total length 3.40. Carapace 1.37 long, 0.96 wide. Abdomen 1.73 long, 0.98 wide. Carapace brownish orange with lateral margins only slightly darkened; chelicerae orange; mouthparts and sternum light orange; abdomen, except for creamy epigastric and spiracular area, covered with purple pigment, dorsum with cardiac mark and four extremely narrow hairline chevrons slightly lighter than remainder, venter with two longitudinal lines extending from lateral edges of posterior spiracles to spinnerets lighter than remainder; legs and palpi light orange. Eye length ratio, ALE:PME:PLE, 11:15:13; PME separated by three-eighths their width from ALE; PLE separated by twice the PME length. Chelicerae 0.60 long. Sternum longer than wide (5:4). Leg spination (right and left leg IV missing): tibia III p1-1-0, v0-0-1p; metatarsus III p1-1-1, v0-0-2. Tarsal organ relatively low, with uniformly elongated cuticular lobes (fig. 51).

	I	II	III	IV	Palp
Femur	1.08	1.01	0.85	—	0.45
Patella	0.50	0.48	0.39	—	0.24
Tibia	0.92	0.84	0.63	—	0.18
Metatarsus	0.85	0.84	0.78	—	—
Tarsus	0.43	0.43	0.40	—	0.36
Total	3.78	3.60	3.05	—	1.23

Palpal bulb pyriform, with large embolar base bearing curved dorsal and distally expanded, feathery ventral projections (figs. 57, 58).

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Malleco, Chile.

Mallecolobus pedrus, new species
Figures 52, 59, 60

TYPE: Male holotype taken in a window trap at an elevation of 360 m in a pine forest 6 km south of San Pedro, Concepción, Chile (December 12, 1982–January 2, 1983; A. Newton and M. Thayer), deposited in AMNH.

ETYMOLOGY: The specific name is an arbitrary combination of letters.

DIAGNOSIS: This species resembles *M. malacus* in having a relatively low tarsal organ, but can be distinguished by having two of the cuticular lobes on the tarsal organ shorter than the others (fig. 52) and by the smaller embolar base and distally twisted ventral embolar projection (figs. 59, 60).

MALE: Total length 3.24. Carapace 1.40 long, 0.97 wide. Abdomen 1.67 long, 0.84 wide. Coloration as in *M. malacus*. Eye length ratio, ALE:PME:PLE, 5:7:6; PME and ALE subcontiguous; ALE separated by three and one-third times the PME length. Chelicerae 0.59 long. Sternum longer than wide (5:4). Leg spination: tibiae: III p1-1-0, v0-0-1p; IV p1-1-0, v0-0-1p; metatarsi: III p0-1-1, v0-0-2; IV p1-1-1, v0-0-2, r1-1-1. Tarsal organ relatively low, with both short and long cuticular lobes (fig. 52).

	I	II	III	IV	Palp
Femur	1.17	1.17	0.92	1.26	0.45
Patella	0.45	0.46	0.38	0.51	0.20
Tibia	1.05	0.90	0.65	1.08	0.27
Metatarsus	1.01	0.96	0.82	1.22	—
Tarsus	0.48	0.46	0.44	0.42	0.35
Total	4.16	3.95	3.21	4.49	1.27

Palpal bulb pyriform, with small embolar base bearing curved dorsal and distally twisted ventral projections (figs. 59, 60).

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Concepción, Chile.

Mallecolobus sanus, new species
Figures 53, 54, 56, 61–63

TYPES: Male holotype and female paratype taken in a window trap at an elevation of 360 m in a pine forest 6 km south of San Pedro, Concepción, Chile (December 12, 1982–January 2, 1983; A. Newton and M. Thayer), deposited in AMNH.

ETYMOLOGY: The specific name is an arbitrary combination of letters.

DIAGNOSIS: Males can be easily distinguished from those of *M. malacus* and *M. pedrus* by the much higher tarsal organ (fig. 53) and the thicker embolus (figs. 61, 62), females from those of *M. maullin* by the shorter "funnel" leading into the posterior receptaculum (fig. 63).

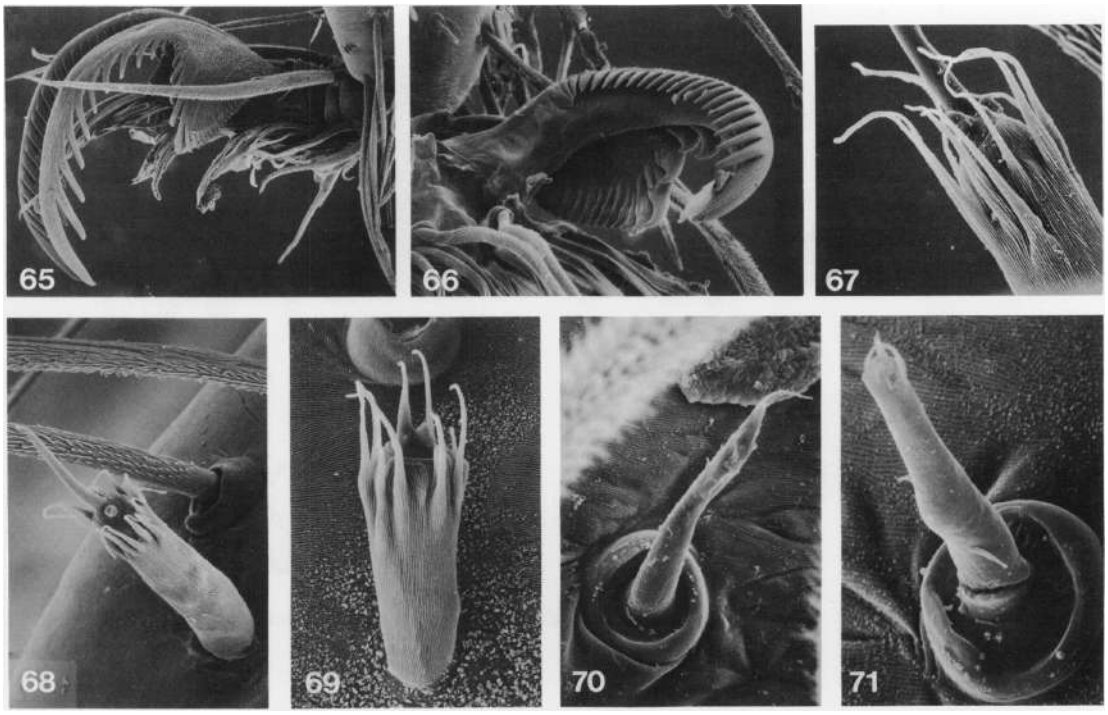
MALE: Total length 4.52. Carapace 2.00 long, 1.61 wide. Abdomen 2.49 long, 1.31 wide. Carapace light orange with posterior portion of pars cephalica lightened and lateral margins only slightly darkened; chelicerae light orange; mouthparts and sternum yellow; abdomen creamy, dorsum covered with purple pigment except in cardiac area and along four hairline posterior chevrons, venter with two lateral longitudinal purple stripes; legs and palpi light yellow. Eye length ratio, ALE: PME:PLE, 7:9:7; PME separated by one-third their width from ALE; PLE separated by two and one-half times the PME length. Chelicerae 0.83 long. Sternum longer than wide (18: 13). Leg spination: tibiae: III p1-1-1, v2-0-2, r1-0-1; IV p1-1-1, v1p-2-2, r1-1-1; metatarsi: III p1-2-1, v2-2-2, r1-1-1; IV p1-2-1, v2-4-2, r1-2-1. Tarsal organ relatively high, with elongated cuticular lobes (fig. 53).

	I	II	III	IV	Palp
Femur	2.19	2.13	1.92	2.41	0.72
Patella	0.85	0.79	0.67	0.83	0.30
Tibia	1.96	1.82	1.37	1.91	0.42
Metatarsus	1.98	1.91	1.64	2.30	—
Tarsus	0.61	0.72	0.54	0.71	0.61
Total	7.59	7.37	6.14	8.16	2.05

Palpal bulb pyriform, with short embolar base bearing thick, curved dorsal and thin, distally feathery ventral projections (figs. 61, 62).

FEMALE: As in male, except for the following. Total length 5.43. Carapace 2.56 long, 1.69 wide. Abdomen 2.61 long, 1.45 wide. PME separated by three-fifths their diameter from ALE; PLE separated by three times the PME length. Chelicerae 0.91 long. Leg spination: tibiae: III p1-1-1, v1p-0-2, r1-1-1; IV p1-2-1, v1p-2p-2, r1-1-1; metatarsi: III as in male; IV p1-2-1, v2-3-4, r1-2-1. Tarsal organ with some cuticular lobes originating far from receptor area (fig. 54).

	I	II	III	IV	Palp
Femur	2.25	2.18	1.83	2.35	0.76
Patella	0.86	0.81	0.79	0.93	0.36
Tibia	1.90	1.76	1.42	2.04	0.47
Metatarsus	1.93	1.84	1.62	2.27	—
Tarsus	0.63	0.61	0.55	0.61	0.86
Total	7.57	7.20	6.21	8.20	2.45



FIGS. 65–71. Tarsal structures of *Chileolobus eden,* new species. 65, 67, 68, 70. Male. 66, 69, 71. Female. 65, 66. Claws. 67–69. Tarsal organ. 70, 71. Proprioreceptor bristles.

Palpal tibia with two prolateral, six dorsal, and one retrolateral spines, tarsus with two dorsal, three prolateral, one distal ventral, and two retrolateral spines; palpal claw long, with one denticle. Internal genitalia (fig. 63) with anterior portion reduced to little more than a plate, posterior portion with funnel-shaped sclerotization leading into very large membranous receptaculum (which in life seems to extend forward above booklungs).

OTHER MATERIAL EXAMINED: One male and four females taken with the types (AMNH, OMD).

DISTRIBUTION: Known only from Concepción, Chile.

Mallecolobus maullin, new species
Figures 55, 64

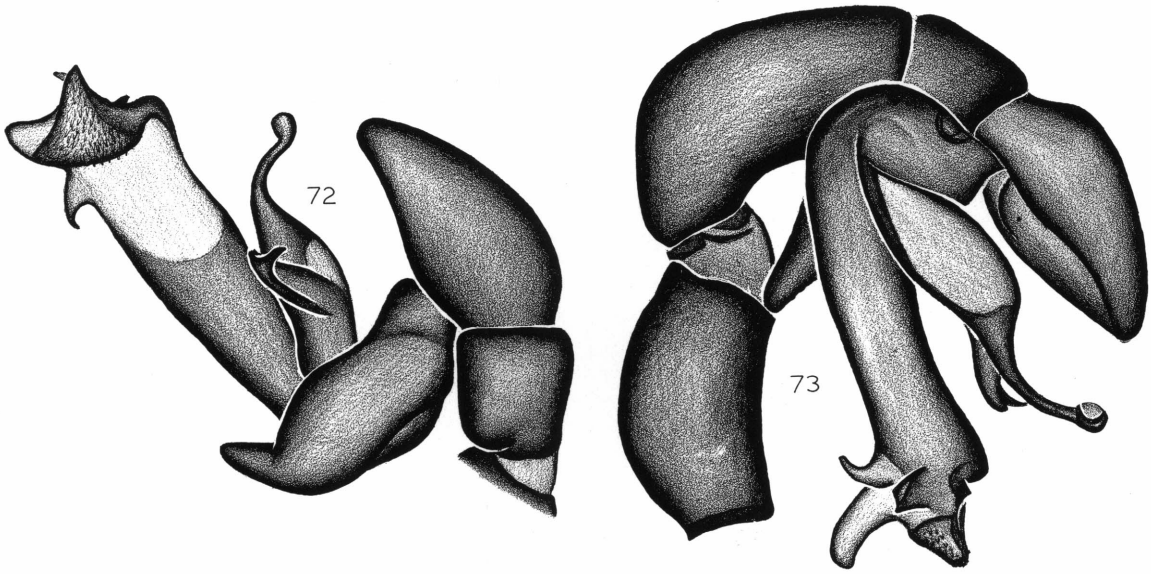
TYPE: Female holotype from "cruce camino a" (crossroad to) Maullín, Llanquihue, Chile (February 28, 1976; T. Cekalovic), deposited in AMNH.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females can be distinguished from those of *M. sanus* by the longer "funnel" leading into the posterior receptaculum (fig. 64).

MALE: Unknown.

FEMALE: Total length 6.53. Carapace 2.41 long, 1.69 wide. Abdomen 4.21 long, 2.59 wide. Carapace brownish orange, lightest at rear of pars cephalica, lateral margins darkened; chelicerae light brown proximally, lighter distally; mouthparts and sternum brownish orange; abdomen gray, dorsum covered with purple pigment except along two hairline posterior chevrons; legs and palpi brownish yellow. Eye length ratio, ALE:PME: PLE, 13:20:20; PME separated by one-fifth their width from ALE; PLE separated by 2.5 times the PME length. Chelicerae 1.12 long. Sternum longer than wide (4:3). Leg spination: tibiae: III, IV p1-1-1, v1p-1p-2, r1-1-1; metatarsi: III p1-2-1, v1p-3-2, r1-2-1; IV p1-2-1, v1p-4-2, r1-2-1. Tarsal organ relatively high, with some short and some long cuticular lobes (fig. 55).



FIGS. 72, 73. *Chileolobus eden,* new species, right male palp. 72. Prolateral view. 73. Retrolateral view.

	I	II	III	IV	Palp
Femur	2.18	2.16	2.01	2.35	0.73
Patella	0.89	0.84	0.70	0.86	0.45
Tibia	1.93	1.89	1.39	2.03	0.47
Metatarsus	1.94	—	1.64	2.48	—
Tarsus	0.72	—	0.65	0.74	0.89
Total	7.66	—	6.39	8.46	2.54

Palpal tibia with three prolateral and two proventral spines, tarsus with three prolateral, four ventral, and two retrolateral spines; palpal claw long, with one tiny denticle. Internal genitalia (fig. 64) with anterior capped plate and long funnel-shaped sclerotization leading into large membranous receptaculum.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Llanquihue, Chile.

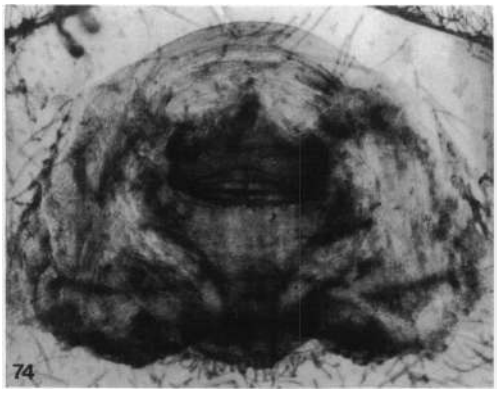
CHILEOLOBUS, NEW GENUS

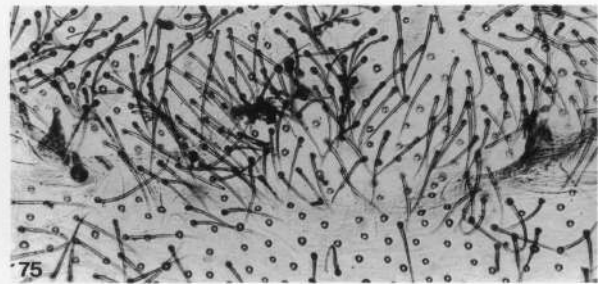
TYPE SPECIES: *Chileolobus eden,* new species.

ETYMOLOGY: The generic name refers to the occurrence of these spiders in Chile, and is masculine in gender.

DIAGNOSIS: *Chileolobus* resembles *Osornolobus* in having a chevron pattern on the abdominal dorsum and a greatly elevated tarsal organ, but its species are much larger (over 5.3 mm), with the male palpal bulb much more complexly elaborated.

DESCRIPTION: Large (total length 5.3–6.5) orsolobids with dorsum of abdomen showing distinct chevron pattern of purple pigment, chevrons restricted to middorsum (figs. 3, 4). Chelicerae with two promarginal and two closely spaced retromarginal teeth. Sternum produced anteriorly behind labium, narrowly truncated posteriorly, with long, sclerotized extensions to each coxa and setose elevations opposite coxae I–III. Colulus prominent, semicircular, with numerous hairs. Female genitalia with broad anterior plate bearing narrow anterior extension and wide, posteriorly narrowed posterior receptaculum. Spines present on tibiae and metatarsi III and IV (and sometimes on femur III). Claws long, especially on legs I and II, with teeth of outer row extending beyond large lateral flange. Tarsal organ greatly elevated, surmounted by cuticular lobes, receptor spine moderately to greatly elongated; proprioreceptor bristles without distinct lateral spines (figs. 70, 71). Palpal claw of female smooth. Male palp complex, tripartite. Posterior spiracles closer to each other than are pulmonary spiracles,





FIGS. 74, 75. *Chileolobus eden,* new species, female. 74. Internal genitalia. 75. Tracheal system, showing apodemal lobes.

with only remnants of interconnecting ducts but with distinct apodemal lobes (fig. 75).

Chileolobus eden, new species
Figures 3, 4, 65–75

TYPE: Male holotype from Puerto Edén, Isla Wellington, Magallanes, Chile (December 10–13, 1962; P. J. Darlington), deposited in MCZ.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

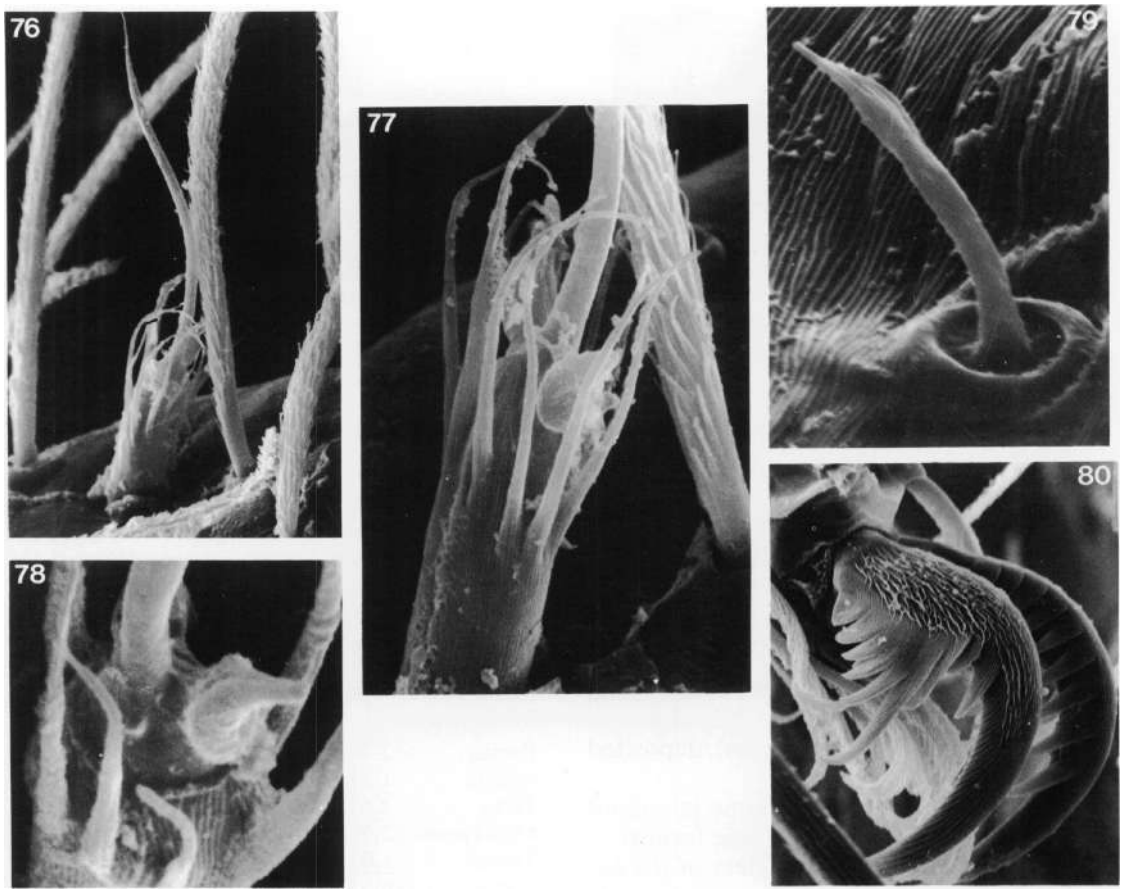
DIAGNOSIS: With the characters of the genus.

MALE: Total length 5.83. Carapace 2.59 long, 1.98 wide. Abdomen 3.06 long, 1.91 wide. Carapace brownish orange, darkest anteriorly, with slightly darkened lateral borders; chelicerae brownish orange; mouthparts and sternum light orange; abdomen creamy white with seven large dorsal chevrons of purple pigment restricted to middorsum (fig. 3) except for most posterior chevron, which encircles spinnerets; legs and palpi light orange. Eye length ratio, ALE:PME:PLE, 14: 12:13; PME separated by one-fourth their width from ALE; PLE separated by three times the PME length. Chelicerae 1.22 long. Sternum longer than wide (11:8). Leg spination: tibiae III, IV d0-1-0, p1-1-1, v1p-2-2, r1-0-1; metatarsi: III d1-1-1, p1-1-1, v2-2-2, r1-0-1; IV d1-1-1, p1-1-1, v2-4-2, r1-2-1. Tarsal organ elongate, almost three times as long as wide, with ten long cuticular lobes and two receptor lobes, one elongate, slightly more than half as long as base (figs. 67, 68). Claws with large lateral flange occupying almost half of claw length on legs III and IV but claws of legs I and II elongated so that flange occupies less than one-fourth of claw length (fig. 65).

	I	II	III	IV	Palp
Femur	2.77	2.87	2.56	3.27	0.96
Patella	1.21	1.19	0.99	1.08	0.88
Tibia	2.63	2.56	2.04	2.59	0.52
Metatarsus	2.59	2.41	2.27	3.08	—
Tarsus	1.02	0.97	0.83	1.01	1.01
Total	10.22	10.00	8.69	11.03	3.37

Palp stout, with complex bulb (figs. 72, 73); basal portion extending down to distoventral surface of femur, where recurved distal margin leaves deep, membranous area against which bulb apparently rests.

FEMALE: As in male, except for the following. Total length 6.46. Carapace 2.43 long, 1.92 wide. Abdomen 3.60 long, 2.65 wide. Abdominal chevrons narrower than in male (fig. 4), most posterior chevron not completely encircling spinnerets ventrally. Eye length ratio, 16:21:18; PME separated by one-fifth their width from ALE; PLE separated by almost three times the PME length. Chelicerae 1.04 long. Sternum longer than wide (11:9). Leg spination: femur III p0-0-1; tibiae: III d0-1-0, p1-0-1, v1p-1p-2, r1-0-1; IV d1-1-0, p1-1-1, v1p-1p-2, r1-0-1; metatarsi: III d1-1-1, p1-1-1, v2-2-2, r0-1-1; IV d2-1-1, p1-1-1, v2-2-2, r1-1-1. Tarsal organ more than twice as long as wide, with receptor spine only



FIGS. 76–80. Tarsal structures of *Osornolobus magallanes*, new species, male. 76–78. Tarsal organ. 79. Proprioreceptor bristle. 80. Claws.

moderately elongated (fig. 69). Claws slightly shorter than in male (fig. 66).

	I	II	III	IV	Palp
Femur	2.27	2.27	1.94	2.52	0.83
Patella	0.88	0.86	0.82	0.99	0.50
Tibia	1.98	1.94	1.33	2.03	0.47
Metatarsus	2.03	1.98	1.77	2.52	—
Tarsus	0.85	0.84	0.72	0.82	1.09
Total	8.01	7.89	6.58	8.88	2.89

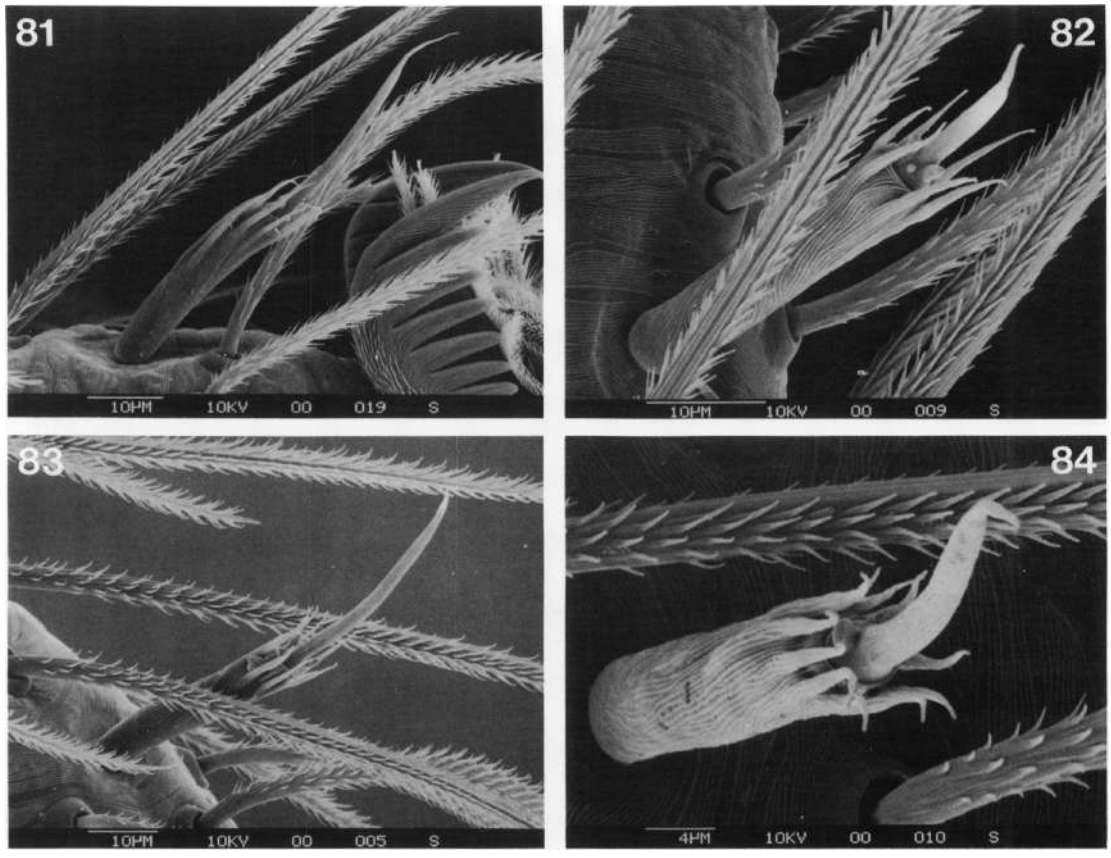
Palpal tibia with one dorsal and three prolateral spines, tarsus with one dorsal, two prolateral, and two distal ventral spines; palpal claw long, smooth. Anterior portion of internal genitalia with short median rod flanked by two lightly sclerotized, curled lateral arms (fig. 74).

OTHER MATERIAL EXAMINED: CHILE: *Magallanes:* Isla Bayly (Surgidero Romanche), Barber trap, Feb. 28–Mar. 4, 1980 (D. Lanfranco-Leverton, INP), 2f; Isla Deceit (Caleta Toledo), Barber trap in forest, Nov. 18–Dec. 2, 1982 (D. Lanfranco-Leverton, INP), 1m, intertidal zone, Nov. 20, 1982 (C. Ríos C., INP), 1f; Isla Hoste (Bahía Orange, Península Hardy), Jan. 2–3, 1963 (P. J. Darlington, MCZ), 2f; Isla Wellington (Puerto Edén), Dec. 10–13, 1962 (P. J. Darlington, MCZ), 1m; Isla Wollaston (Caleta Lientur), Barber traps in forest and bog, Feb. 15–25, 1980 (D. Lanfranco-Leverton, INP), 2f.

DISTRIBUTION: Known only from Magallanes, Chile.

OSORNOLOBUS, NEW GENUS

TYPE SPECIES: *Osornolobus canan*, new species.



FIGS. 81–84. Tarsal organ from leg I of *Osornolobus*. 81. *O. canan*, new species, male. 82. Same, female. 83. *O. chiloe*, new species, male. 84. Same, female.

ETYMOLOGY: The generic name refers to the occurrence of these spiders in Osorno Province, Chile, and is masculine in gender.

DIAGNOSIS: *Osornolobus* resembles *Chileolobus* in having a chevron pattern on the abdominal dorsum and a greatly elevated tarsal organ, but its species are much smaller (under 3.6 mm), with the male palpal bulb pyriform rather than composed of three distinct elements.

DESCRIPTION: Small (total length 1.8–3.6) orsolobids with dorsum of abdomen showing distinct chevron pattern of purple pigment (chevrons sometimes fused laterally). Chelicerae usually with two promarginal and two closely spaced retromarginal teeth. Sternum produced anteriorly behind labium, usually broadly truncated posteriorly, with long, triangular sclerotized extensions to each coxa and elevations opposite coxae I–III. Colulus small, triangular. Female genitalia with anterior portion rod-shaped, sometimes with spherical receptacula at base, posterior portion with secretory poreplate and sometimes further posterior extension. Spines present on tibiae and metatarsi III and IV (and sometimes femur I and tibiae and metatarsi I and II as well). Claws short, with teeth of outer row sometimes extending beyond lateral flange (fig. 80), which varies from scarcely detectable to quite large. Tarsal organ greatly elevated, surmounted by long cuticular lobes; receptor spine moderately to greatly elongated (figs. 76–78); proprioreceptor bristles without lateral spines (fig. 79). Palpal claw of female smooth. Male palp varying from simple bulb with spiniform embolus to complexly lobed organ. Posterior spiracles closer

to each other than are pulmonary spiracles, not interconnected.

Osornolobus canan, new species
Figures 81, 82, 85–87, 91, 92

TYPES: Male holotype and female paratype from Canan, Isla de Chiloé, Chiloé, Chile (February 26, 1972; T. Cekalovic), deposited in AMNH.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species seems most closely related to *O. chiloe*; males of both have a distinct ventral bulge proximally on the palpal bulb not found in other species. Both sexes can be distinguished by the details of the color pattern and genitalia described below.

MALE: Total length 1.91. Carapace 0.86 long, 0.76 wide. Abdomen 0.91 long, 0.54 wide. Carapace orange with purple lateral margins; chelicerae orange; mouthparts and sternum light orange; abdomen creamy with anterior face and anterior two-fifths of dorsum covered with purple pigment extending around sides to venter, posterior three-fifths of dorsum with seven purple chevrons decreasing in size posteriorly, two most anterior of which extend down sides to spinnerets and most posterior of which does not extend ventrally around the spinnerets; legs and palpi light orange. Eye length ratio, ALE:PME:PLE, 6:9:7; PME separated by one-fourth their width from ALE; PLE separated by slightly more than twice the PME length. Chelicerae 0.40 long, with two promarginal and two retromarginal teeth. Sternum longer than wide (33:28), broadly truncated posteriorly. Leg spination: tibiae: III p1-1-0, v0-0-2, r1-0-0; IV p1-1-0, v1p-lp-2, r1-1-0; metatarsi: III p1-0-1, r1-0-1; IV p1-1-1, v2-0-2, r1-1-1. Tarsal organ elongate, with long, narrow receptor spine (fig. 81). Claws short, with teeth of outer row restricted to scarcely expanded lateral flange.

	I	II	III	IV	Palp
Femur	0.84	0.73	0.66	0.88	0.36
Patella	0.45	0.37	0.28	0.35	0.18
Tibia	0.73	0.63	0.48	0.74	0.26
Metatarsus	0.72	0.59	0.52	0.83	—
Tarsus	0.38	0.33	0.25	0.36	0.27
Total	3.12	2.65	2.19	3.16	1.07

Palpal bulb with ventral bulge proximally on retrolateral surface and complex distal elaborations (figs. 85–87).

FEMALE: As in male except for the following. Total length 2.04. Carapace 0.88 long, 0.79 wide. Abdomen 1.10 long, 0.64 wide. Eye length ratio, 3:4:3; PME separated by two-fifths their width from ALE; PLE separated by almost three times the PME length. Chelicerae 0.42 long. Leg spination: tibiae as in male; metatarsi: III p1-0-1, v0-0-2, r1-0-1; IV p1-1-1, v2-0-2, r1-1-1. Tarsal organ with receptor spine shorter, thicker than in male (fig. 82).

	I	II	III	IV	Palp
Femur	0.82	0.72	0.60	0.82	0.28
Patella	0.41	0.36	0.25	0.36	0.16
Tibia	0.68	0.58	0.40	0.68	0.18
Metatarsus	0.61	0.53	0.48	0.75	—
Tarsus	0.34	0.27	0.26	0.28	0.35
Total	2.86	2.46	1.99	2.89	0.97

Palpal tibia with four prolateral spines, tarsus with one prolateral and one distal ventral spine. Internal genitalia (figs. 91, 92) with straight anterior rod and circular posterior secretory plate with narrow posterior extension.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Chiloe Island, Chile.

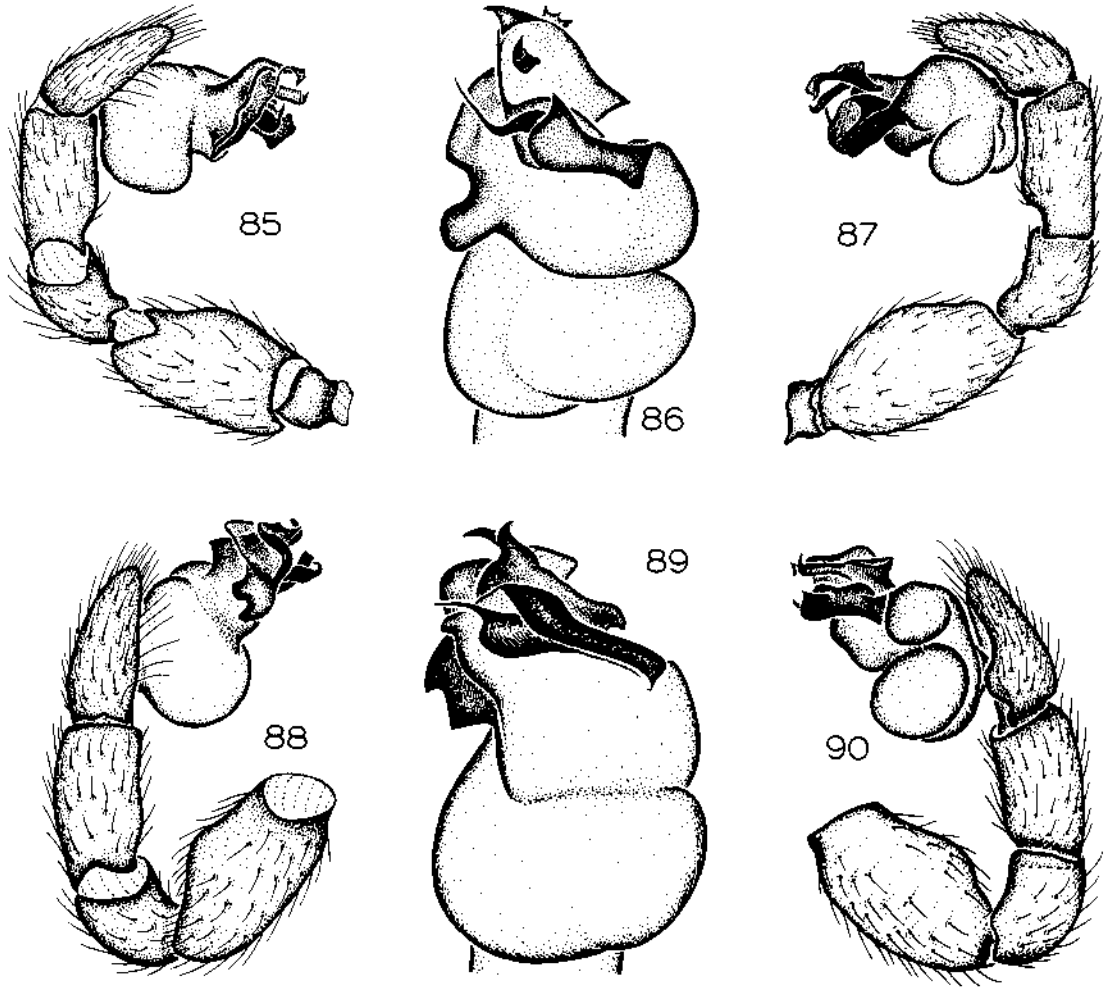
Osornolobus chiloe, new species
Figures 83, 84, 88–90, 93, 94

TYPES: Male holotype and female paratype from Lago Huillinco, Isla de Chiloé, Chiloé, Chile (January 31, 1983; T. Cekalovic), deposited in AMNH.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species seems closest to *O. canan* but can be distinguished by having only six abdominal chevrons, by the straight embolus (figs. 88–90), and by the wider posterior extension of the secretory plate (figs. 93, 94).

MALE: Total length 2.07. Carapace 0.97 long, 0.83 wide. Abdomen 1.01 long, 0.73 wide. Carapace brownish yellow with dark lateral margins; chelicerae pale brown; mouthparts and sternum light yellow; ab-



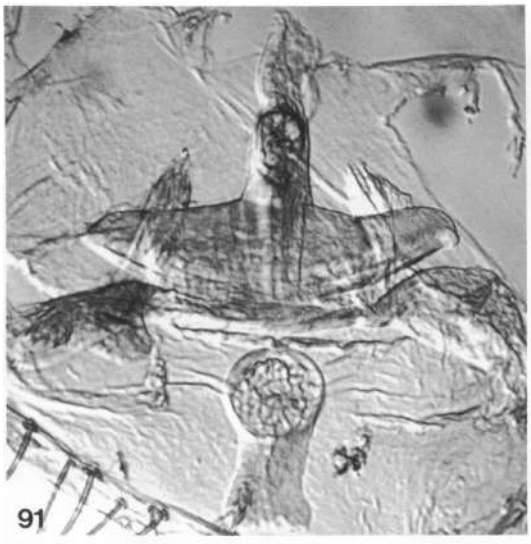
FIGS. 85–90. Left male palp of *Osornolobus*. 85–87. *O. canan*, new species. 88–90. *O. chiloe*, new species. 85, 88. Prolateral view. 86, 89. Ventral view of bulb. 87, 90. Retrolateral view.

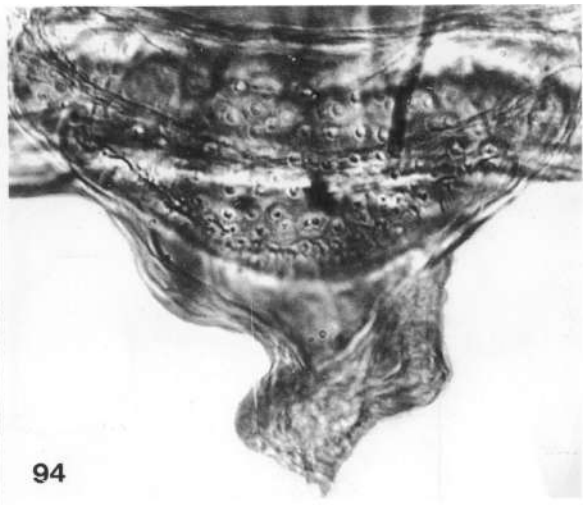
domen as in *O. canan* except dorsum with only six posterior chevrons and spinnerets surrounded by purple pigment; legs and palpi yellow. Eye length ratio, ALE:PME:PLE, 2:3:3; PME separated by slightly more than half their width from ALE; PLE separated by three times the PME length. Chelicerae 0.38 long, with two promarginal and two retromarginal teeth. Sternum longer than wide (7:6), sharply pointed posteriorly. Leg spination: tibiae: III p1-1-0, v1p-1p-2, r1-1-0; IV p1-1-0, v1p-1p-2, r1-1-1; metatarsi: III p1-0-1, v1p-0-2, r1-0-1; IV p1-1-1, v2-1p-2, r1-1-1. Tarsal organ elongate, with long, narrow receptor spine (fig. 83). Claws as in *O. canan*.

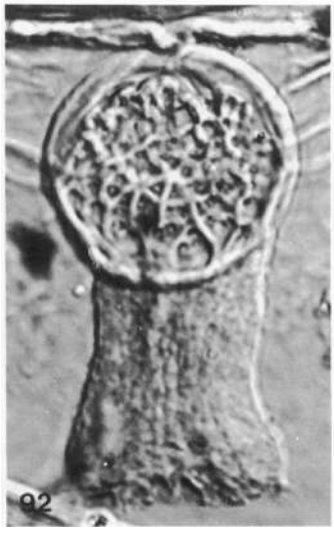
	I	II	III	IV	Palp
Femur	0.83	0.86	0.72	0.94	0.38
Patella	0.45	0.38	0.24	0.36	0.20
Tibia	0.82	0.64	0.52	0.79	0.24
Metatarsus	0.79	0.60	0.50	0.86	—
Tarsus	0.41	0.29	0.25	0.31	0.25
Total	3.30	2.77	2.23	3.26	1.07

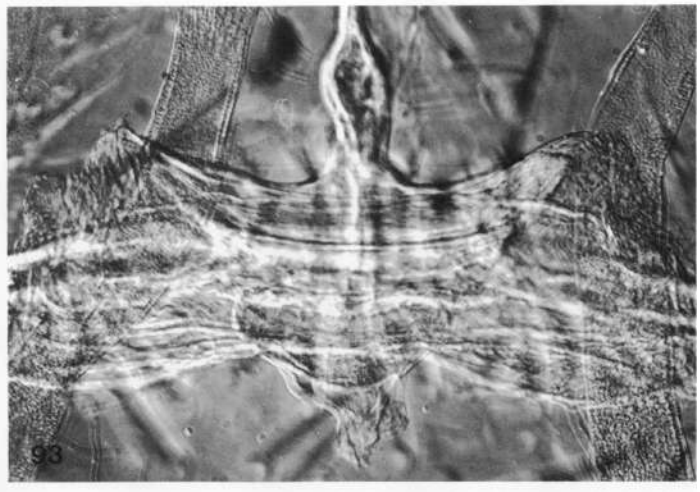
Palpal bulb with ventral bulge proximally on retrolateral surface and complex distal elaborations (figs. 88–90).

FEMALE: As in male except for the following. Total length 2.48. Carapace 1.03 long, 0.86 wide. Abdomen 1.37 long, 0.85 wide. Chelicerae 0.46 long. Sternum narrowly trun-









FIGS. 91–94. Internal female genitalia of *Osornolobus*. 91, 92. *O. canan*, new species. 93, 94. *O. chiloe*, new species.

cated posteriorly. Leg spination: tibiae: III p1-1-0, v0-1p-2, r1-1-0; IV as in male; metatarsi as in male. Tarsal organ with receptor spine shorter, thicker than in male (fig. 84).

	I	II	III	IV	Palp
Femur	0.86	0.85	0.68	0.92	0.29
Patella	0.41	0.45	0.31	0.33	0.14
Tibia	0.75	0.63	0.50	0.79	0.16
Metatarsus	0.73	0.54	0.52	0.83	—
Tarsus	0.30	0.32	0.32	0.34	0.33
Total	3.05	2.79	2.33	3.21	0.92

Palpal tibia with three prolateral spines, tarsus with one prolateral and two ventral spines. Internal genitalia (figs. 93, 94) with sinuous anterior rod and wide posterior secretory plate with wide posterior extension.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Chiloe Island, Chile.

Osornolobus cekalovici, new species

Figures 95, 96, 101

TYPE: Male holotype from Curaco de Velez, Isla Quinchao, Chiloé, Chile (January 30, 1983; T. Cekalovic), deposited in AMNH.

ETYMOLOGY: The specific name is a patronym in honor of Dr. Tomás Cekalovic, collector of the type specimen and many other interesting Chilean spiders.

DIAGNOSIS: This species can be recognized by the subterminal, curved flap on the ventral prong of the palpal bulb (figs. 95, 96).

MALE: Total length 2.41. Carapace 1.16 long, 0.90 wide. Abdomen 1.17 long, 0.71 wide. Carapace brownish orange, lighter on posterior half of pars cephalica, with purple lateral margins and four light purple stripes extending back short distance from posterior eyes; mouthparts and sternum yellow; abdomen creamy, dorsum with broad anterior transverse purple stripe, anterior one-third of which extends obliquely around sides to venter, and six posterior chevrons fused laterally, two most anterior of which extend along sides to spinnerets but do not meet; venter with median longitudinal purple patch on genital area and three longitudinal purple patches behind epigastric furrow; legs and palpi yellow. Eye length ratio, ALE:PME:PLE, 2:3:3; PME separated by one-third their width from ALE; PLE separated by 2.5 times the PME length. Chelicerae 0.43 long, with two promarginal and two retromarginal teeth. Sternum longer than wide (19:17), as in *O. canan*. Leg spination: tibiae: III p1-1-0, v0-1p-2, r0-1-0; IV p1-1-0, v1p-1p-2, r1-1-0; metatarsi: III p1-0-1, v2-2-2, r1-0-1; IV p1-1-1, v2-2-2, r1-1-1. Tarsal organ elongate, with long, distally narrowed receptor spine (fig. 101). Claws dissimilar; those of leg IV like *O. canan*, those of legs I–III with large lateral flange and additional outer row teeth distal to flange.

	I	II	III	IV	Palp
Femur	1.19	1.12	0.90	1.31	0.37
Patella	0.49	0.49	0.38	0.45	0.21
Tibia	1.00	0.94	0.73	1.09	0.27
Metatarsus	0.90	0.90	0.89	1.22	—
Tarsus	0.40	0.43	0.32	0.43	0.23
Total	3.98	3.88	3.22	4.50	1.08

Palpal bulb pyriform, with bipartite terminal elements (figs. 95, 96).

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Quinchao Island, Chile.

Osornolobus magallanes, new species
Figures 5, 76–80, 97, 98

TYPE: Male holotype taken at an elevation of 20 m at Bahía Orange, Península Hardy, Isla Hoste, Magallanes, Chile (December 10, 1963; J. C. Boyd), deposited in BPBM.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

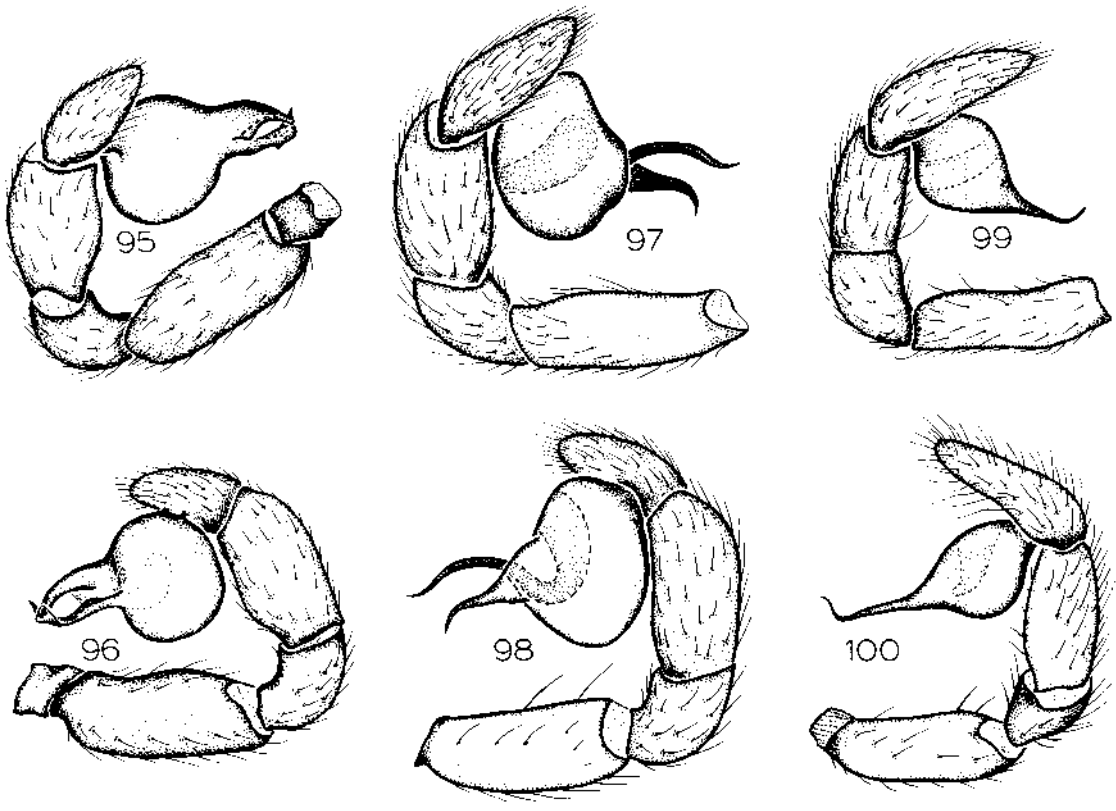
DIAGNOSIS: Males of this species resemble *O. cekalovici* in having two sinuous terminal processes on the male palpal bulb but differ in having the ventral process larger than the dorsal (figs. 97, 98). Females resemble those of *O. concepcion* but have the posterior secretory plate of the internal genitalia wider than in that species.

MALE: Total length 2.17. Carapace 0.94 long, 0.79 wide. Abdomen 1.07 long, 0.68 wide. Carapace brownish orange with purple pigment in distinct pattern (fig. 5); chelicerae, mouthparts, and sternum brownish yellow; abdomen as in *O. cekalovici* except only six posterior chevrons present and most posterior chevron encircles spinnerets; legs and palpi light yellow. Eye length ratio, ALE:PME:PLE, 6:9:8; PME separated by one-third their width from ALE; PLE separated by 2.5 times the PME length. Chelicerae 0.34 long, with two promarginal and two retromarginal teeth. Sternum longer than wide (16:15), broadly truncated posteriorly. Leg spination: tibiae: I v2-1r-0; II v1r-0-0; III p1-1-0, v0-1p-2, r1-1-0; IV p1-1-0, v1p-2-2, r1-0-0; metatarsi: I, II v2-0-0; III p1-1-1, v2-2-2, r1-0-1; IV p1-1-1, v2-2-2, r1-1-1. Tarsal organ elongate, with very long, distally sinuous receptor spine and second, slightly elongated receptor lobe (figs. 76–78). Claws with one tooth of outer row distal to lateral flange (fig. 80).

	I	II	III	IV	Palp
Femur	0.77	0.73	0.65	0.83	0.27
Patella	0.36	0.34	0.24	0.35	0.12
Tibia	0.65	0.54	0.43	0.65	0.22
Metatarsus	0.58	0.52	0.46	0.64	—
Tarsus	0.32	0.29	0.27	0.27	0.20
Total	2.68	2.42	2.05	2.74	0.81

Palpal bulb with two sinuous distal processes (figs. 97, 98).

FEMALE: As in male, except for the following. Total length 2.25. Carapace 1.01 long,



FIGS. 95–100. Left male palp of *Osornolobus*. 95, 96. *O. cekalovici*, new species. 97, 98. *O. magallanes*, new species. 99, 100. *O. chaiten*, new species. 95, 97, 99. Prolateral view. 96, 98, 100. Retrolateral view.

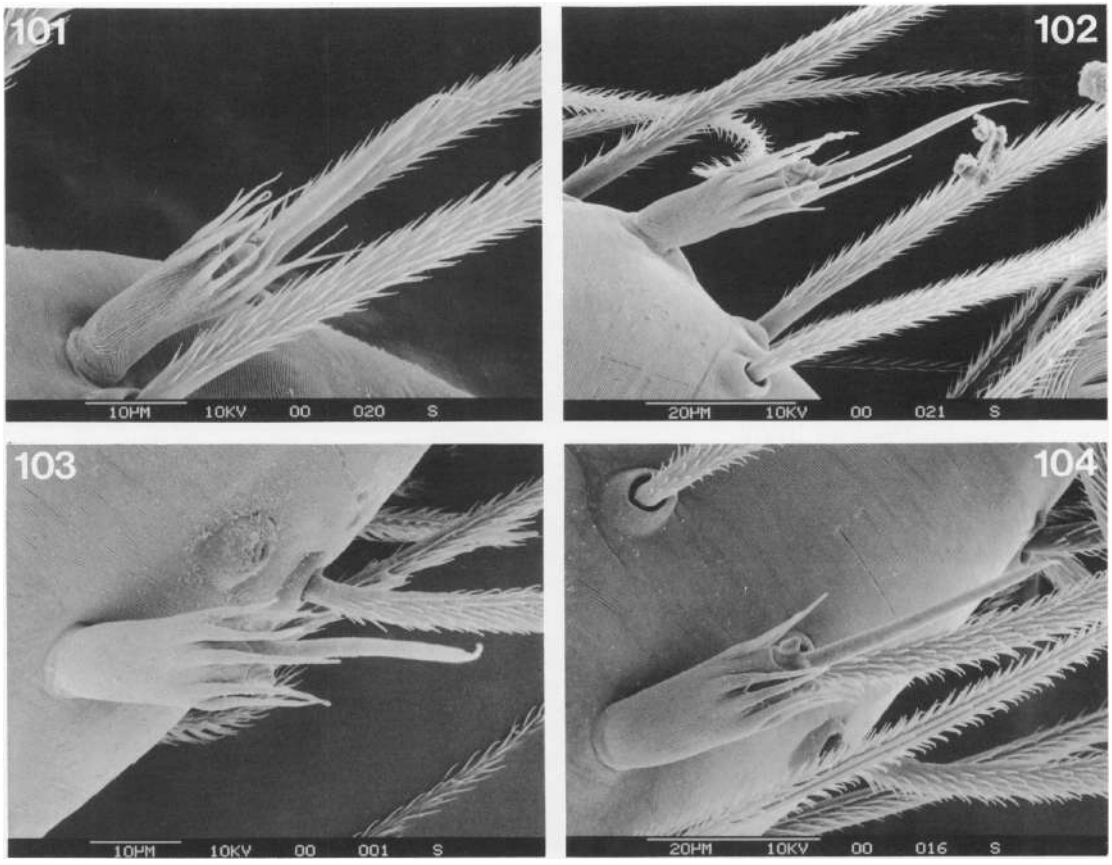
0.80 wide. Abdomen 1.12 long, 0.84 wide. Chelicerae 0.38 long. Sternum longer than wide (17:15). Leg spination: femur I d0-0-1, p0-0-1; tibiae: I v2-2-0; II v1r-1r-0; III p1-1-0, v0-2-2, r1-1-0; IV p1-1-0, v2-2-2, r1-1-0; metatarsi: I, II v2-2-0; III d0-1-1, p1-1-1, v2-2-2, r0-1-1; IV d1-0-1, p1-1-1, v2-2-2, r1-1-1. Tarsal organ elongate, with long receptor spine.

	I	II	III	IV	Palp
Femur	0.83	0.79	0.64	0.86	0.29
Patella	0.41	0.38	0.25	0.43	0.14
Tibia	0.64	0.61	0.47	0.72	0.19
Metatarsus	0.58	0.54	0.50	0.79	—
Tarsus	0.34	0.34	0.26	0.26	0.37
Total	2.80	2.66	2.12	3.06	0.99

Palpal tibia without spines, tarsus with one dorsal, one prolateral, and two distal ventral spines; palpal claw short, blunt, smooth. Internal female genitalia as in *O. concepcion* but posterior secretory plate considerably wider, almost as wide as sclerotized transverse bar.

OTHER MATERIAL EXAMINED: CHILE: *Magallanes:* Isla Bayly (Surgidero Romanche), Barber trap, Feb. 28–Mar. 4, 1980 (D. Lanfranco-Leverton, INP), 1m, 1f; Isla Deceit (Caleta Toledo), Barber trap in bog, Nov. 18–Dec. 2, 1982 (D. Lanfranco-Leverton, INP), 1f; Isla Hoste (Bahía Orange, Península Hardy), elevation 20 m, Dec. 10, 1963 (J. C. Boyd, BPBM), 1m; Isla Wollaston (Caleta Lientur), Barber trap in forest, Feb. 15–25, 1980 (D. Lanfranco-Leverton, INP), 1f.

DISTRIBUTION: Known only from Magallanes, Chile.



FIGS. 101–104. Tarsal organ from leg I of *Osornolobus*. 101. *O. cekalovici,* new species. 102. *O. chaiten,* new species. 103. *O. chapo,* new species, male. 104. Same, female.

Osornolobus chaiten, new species
Figures 99, 100, 102

TYPE: Male holotype taken in a Berlese sample of concentrated forest moss from an elevation of 0–100 m at Chaitén, Chiloé, Chile (December 7, 1981; N. I. Platnick and R. T. Schuh), deposited in AMNH.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species seems closest to *O. chapo* (males of both have extremely simplified palpi differing only in the shape of the subterminal bend of the embolus) but can be distinguished by the unmarked sternum.

MALE: Total length 2.64. Carapace 1.21 long, 0.92 wide. Abdomen 1.33 long, 0.80 wide. Carapace brownish yellow with purple markings along lateral margins and extending back from each posterior eye to thoracic groove, sides with vague indications of radiating purple lines; chelicerae light brownish yellow; mouthparts and sternum yellow; abdomen as in *O. canan* except dorsum with only six posterior chevrons and venter with two paramedian purple patches behind epigastric furrow; legs and palpi yellow. Eye length ratio, ALE:PME:PLE, 8:11:10; PME separated by half their width from ALE; PLE separated by almost 2.5 times the PME length. Chelicerae 0.41 long, with two promarginal and two retromarginal teeth. Sternum longer than wide (4:3), narrowed and pointed posteriorly. Leg spination: tibiae: III p1-1-0, v0-1p-2, r1-1-0; IV p1-1-0, v1p-2-2, r1-1-1; metatarsi: III p1-0-1, v2-2-2, r1-0-1; IV p1-

1-1, v2-2-2, r1-1-1. Tarsal organ elongate, with long, distally narrowed receptor spine (fig. 102). Claws short, with teeth of outer row restricted to proximally slightly expanded lateral flange.

	I	II	III	IV	Palp
Femur	1.19	1.04	0.94	1.17	0.33
Patella	0.47	0.43	0.41	0.46	0.14
Tibia	0.96	0.94	0.70	1.03	0.22
Metatarsus	0.95	0.92	0.88	1.13	—
Tarsus	0.43	0.47	0.40	0.48	0.37
Total	4.00	3.80	3.33	4.27	1.06

Palpal bulb pyriform with simple, distally curved embolus (figs. 99, 100).

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from the mainland of Chiloé, Chile.

Osornolobus chapo, new species
Figures 103–106

TYPES: Male holotype taken in a window trap and female paratype taken in a Berlese sample of leaf and log litter, both in a Valdivian rainforest at an elevation of 310 m at Lago Chapo, 13.5 km east of Correntoso, Llanquihue, Chile (December 16–27, 1982; A. Newton and M. Thayer), deposited in AMNH.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species seems closest to *O. chaiten* but can be distinguished by the purple pigment on the sternum.

MALE: Total length 2.52. Carapace 1.26 long, 0.95 wide. Abdomen 1.31 long, 0.70 wide. Coloration as in *O. chaiten* except pars cephalica with additional purple pigment along midline, sternum with wide v-shaped purple marginal band, and most anterior dorsal abdominal chevron almost fused to anterior purple band. Eye length ratio, ALE: PME:PLE, 7:9:9; PME separated by one-third their width from ALE; PLE separated by three times the PME length. Chelicerae 0.46 long, with two promarginal and two retromarginal teeth. Sternum longer than wide (6:5), narrowly truncated posteriorly. Leg spination: tibiae: III p1-1-0, v1p-1p-2, r1-1-0; IV p1-1-0, v2-2-2, r1-1-1; metatarsi: III p1-1-1, v2-2-2, r1-0-1; IV p1-1-1, v2-2-2, r1-1-1. Tarsal organ elongate, with distally bent receptor spine (fig. 103). Claws as in *O. chaiten.*

	I	II	III	IV	Palp
Femur	1.21	1.15	0.97	1.31	0.33
Patella	0.50	0.45	0.36	0.44	0.16
Tibia	1.08	0.94	0.77	1.08	0.25
Metatarsus	0.96	0.84	0.83	1.18	—
Tarsus	0.47	0.43	0.36	0.40	0.29
Total	4.22	3.81	3.29	4.41	1.03

Palpal bulb pyriform, with simple, distally curved embolus (figs. 105, 106).

FEMALE: As in male except for following. Total length 3.58. Carapace 1.40 long, 1.07 wide. Abdomen 1.89 long, 1.25 wide. Eye length ratio, 2:3:3; PLE slightly closer than in male. Chelicerae 0.52 long. Leg spination: tibiae: III p1-1-0, v1p-2-2, r1-1-0; IV p1-1-0, v0-2-2, r1-1-0; metatarsi: III p0-1-1, v2-2-2, r0-1-1; IV p1-0-1, v2-4-2, r1-1-1. Tarsal organ with receptor spine longer than in male (fig. 104).

	I	II	III	IV	Palp
Femur	1.22	1.01	0.99	1.35	0.43
Patella	0.43	0.45	0.43	0.48	0.25
Tibia	1.08	0.90	0.71	1.17	0.27
Metatarsus	1.02	0.93	0.82	1.20	—
Tarsus	0.45	0.43	0.40	0.43	0.50
Total	4.20	3.72	3.35	4.63	1.45

Palpal tibia with one dorsal and three prolateral spines, tarsus with one dorsal, two prolateral, and two distal ventral spines. Internal genitalia with pair of short, ducted spherical receptacula at base of anterior rod and wide posterior secretory plate without posterior extension.

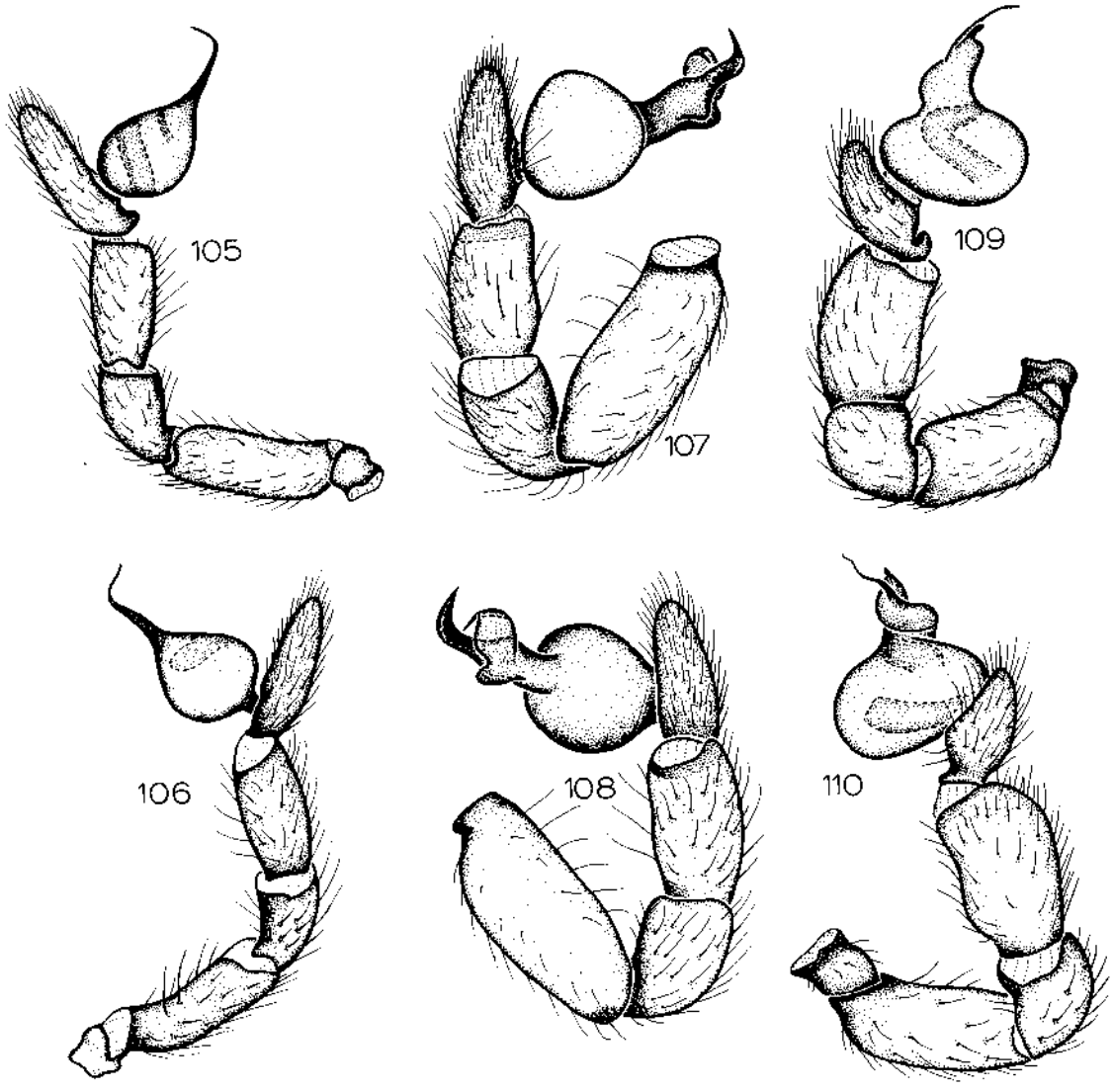
OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Llanquihue, Chile.

Osornolobus correntoso, new species
Figures 107, 108, 111

TYPE: Male holotype taken in a window trap in a Valdivian rainforest at an elevation of 310 m at Lago Chapo, 13.5 km east of Correntoso, Llanquihue, Chile (December 16–27, 1982; A. Newton and M. Thayer), deposited in AMNH.

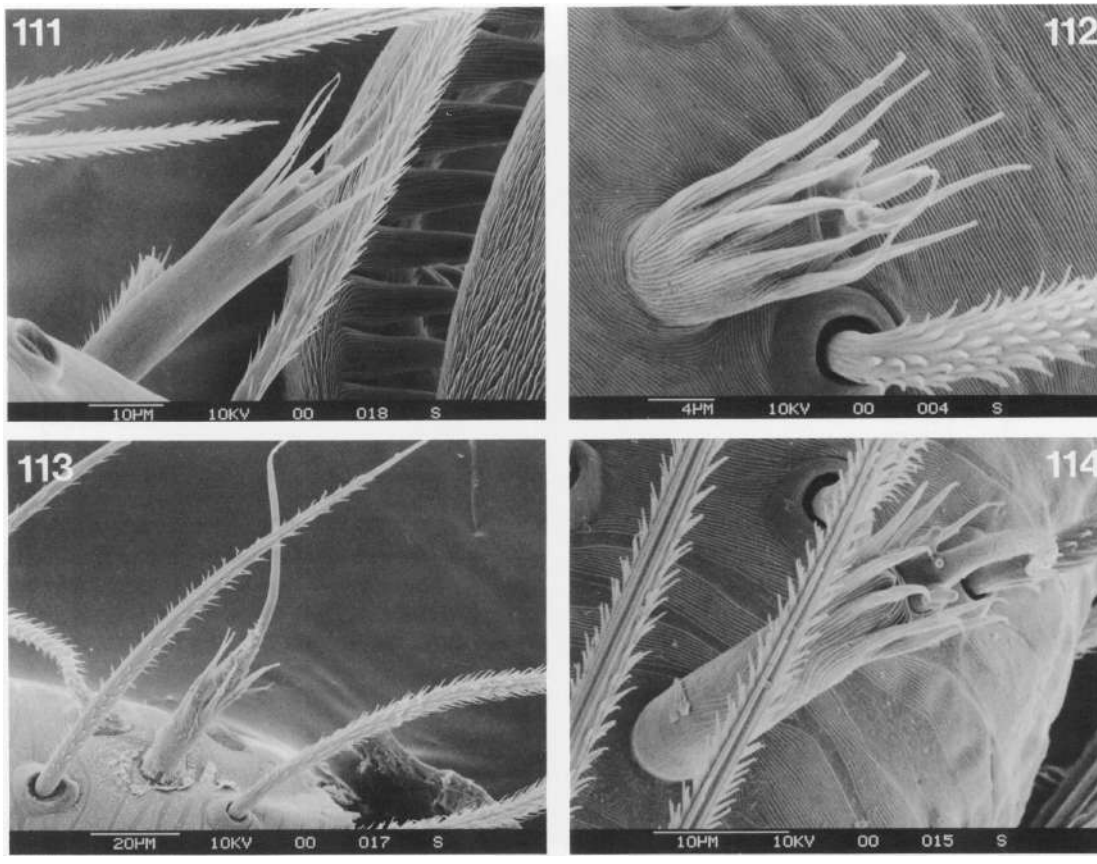
ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.



FIGS. 105–110. Left male palp of *Osornolobus*. 105, 106. *O. chapo*, new species. 107, 108. *O. correntoso*, new species. 109, 110. *O. newtoni*, new species. 105, 107, 109. Prolateral view. 106, 108, 110. Retrolateral view.

DIAGNOSIS: This species can be easily recognized by the dorsally twisted ventral prong of the palpal bulb (figs. 107, 108).

MALE: Total length 2.52. Carapace 1.37 long, 0.99 wide. Abdomen 1.33 long, 0.85 wide. Coloration as in *O. chaiten* except that lateral extensions of two most anterior dorsal abdominal chevrons are interrupted. Eye length ratio, ALE:PME:PLE, 5:6:6; PME separated by one-fourth their width from ALE; PLE separated by 2.5 times the PME length. Chelicerae 0.49 long, with two promarginal and two retromarginal teeth. Sternum longer than wide (11:10), broadly truncated posteriorly. Leg spination: tibiae: III p1-1-0, v0-1p-2, r1-1-0; IV p1-1-0, v1p-1p-2, r1-1-0; metatarsi: III p1-1-1, v2-2-2, r1-0-1; IV p1-1-1, v2-2-2, r1-1-1. Tarsal organ elongate,



FIGS. 111–114. Tarsal organ from leg I of *Osornolobus*. 111. *O. correntoso*, new species. 112. *O. newtoni*, new species. 113. *O. thayerae*, new species, male. 114. Same, female.

with long receptor spine (fig. 111). Claws short, with lateral flange larger on leg IV than on legs I–III.

	I	II	III	IV	Palp
Femur	1.22	1.22	1.12	1.53	0.49
Patella	0.54	0.50	0.43	0.49	0.24
Tibia	1.17	1.09	0.85	1.22	0.29
Metatarsus	1.03	1.01	0.95	1.41	—
Tarsus	0.41	0.45	0.45	0.46	0.27
Total	4.37	4.27	3.80	5.11	1.29

Palpal bulb rotund, with broad ventral projection curled around curved dorsal projection (figs. 107, 108).

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

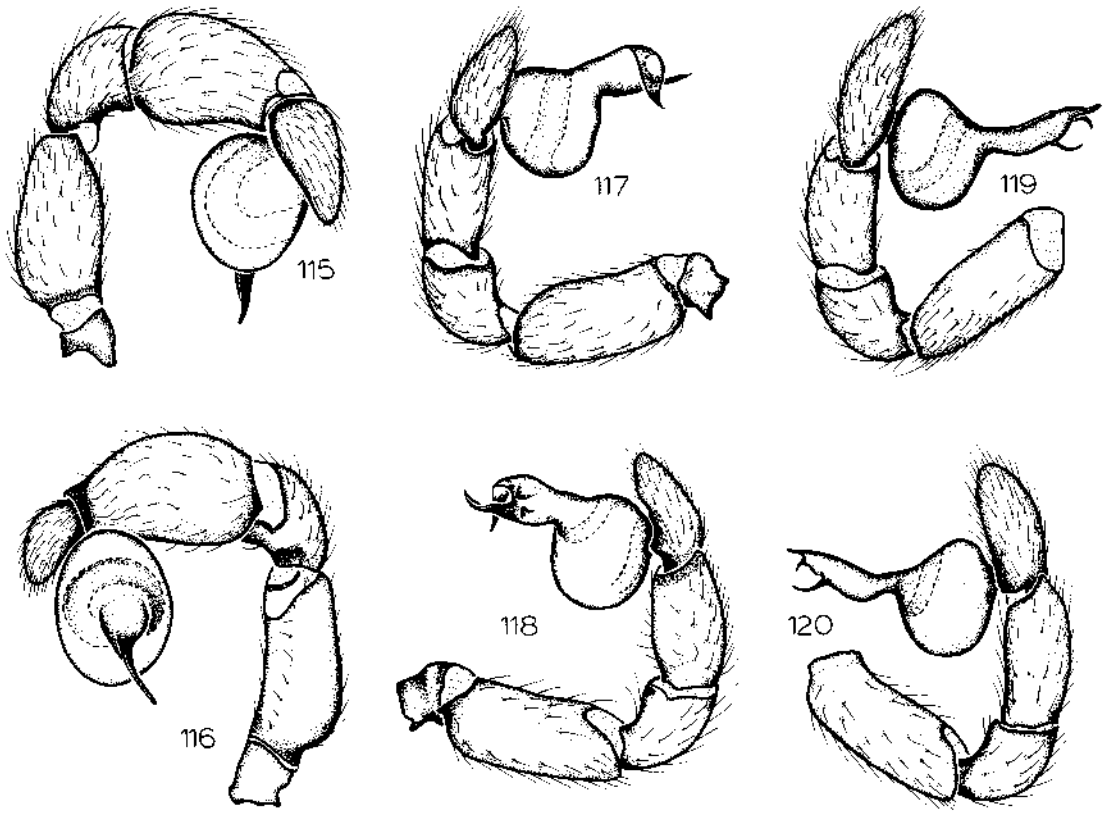
DISTRIBUTION: Known only from Llanquihue, Chile.

Osornolobus newtoni, new species
Figures 109, 110, 112

TYPE: Male holotype taken in a window trap in a *Nothofagus pumilio* forest at an elevation of 965 m on the Antillanca road in the Parque Nacional Puyehue, Osorno, Chile (December 18–25, 1982; A. Newton and M. Thayer), deposited in AMNH.

ETYMOLOGY: The specific name is a patronym in honor of Dr. Alfred F. Newton, Jr., collector of the holotype and many other orsolobids.

DIAGNOSIS: The large, twisted embolar base (figs. 109, 110) is diagnostic.



FIGS. 115–120. Left male palp of *Osornolobus*. 115, 116. *O. thayerae*, new species. 117, 118. *O. antillanca*, new species. 119, 120. *O. anticura*, new species. 115, 117, 119. Prolateral view. 116, 118, 120. Retrolateral view.

MALE: Total length 2.29. Carapace 0.99 long, 0.86 wide. Abdomen 1.19 long, 0.71 wide. Coloration as in *O. chaiten* except pars cephalica with additional purple pigment along midline and spinnerets almost entirely surrounded by purple pigment. Eye length ratio, ALE:PME:PLE, 6:7:7; PME separated by half their width from ALE; PLE separated by more than three times the PME length. Chelicerae 0.43 long, with two promarginal and two retromarginal teeth. Sternum longer than wide (19:17), broadly truncated posteriorly. Leg spination: tibiae: III v0-0-1p; IV v0-1p-1p; metatarsi: III p1-0-1, r0-0-1; IV p1-0-1, v1r-1p-1p. Tarsal organ elongate, receptor spine only moderately elongated (fig. 112). Claws short, with teeth of outer row extending beyond slight proximal lateral flange.

	I	II	III	IV	Palp
Femur	0.84	0.81	0.72	0.94	0.34
Patella	0.38	0.38	0.31	0.41	0.15
Tibia	0.62	0.63	0.53	0.79	0.23
Metatarsus	0.58	0.61	0.59	0.86	—
Tarsus	0.36	0.34	0.29	0.35	0.18
Total	2.78	2.77	2.44	3.35	0.90

Palpal bulb bearing large, twisted, distally flattened embolar base (figs. 109, 110).

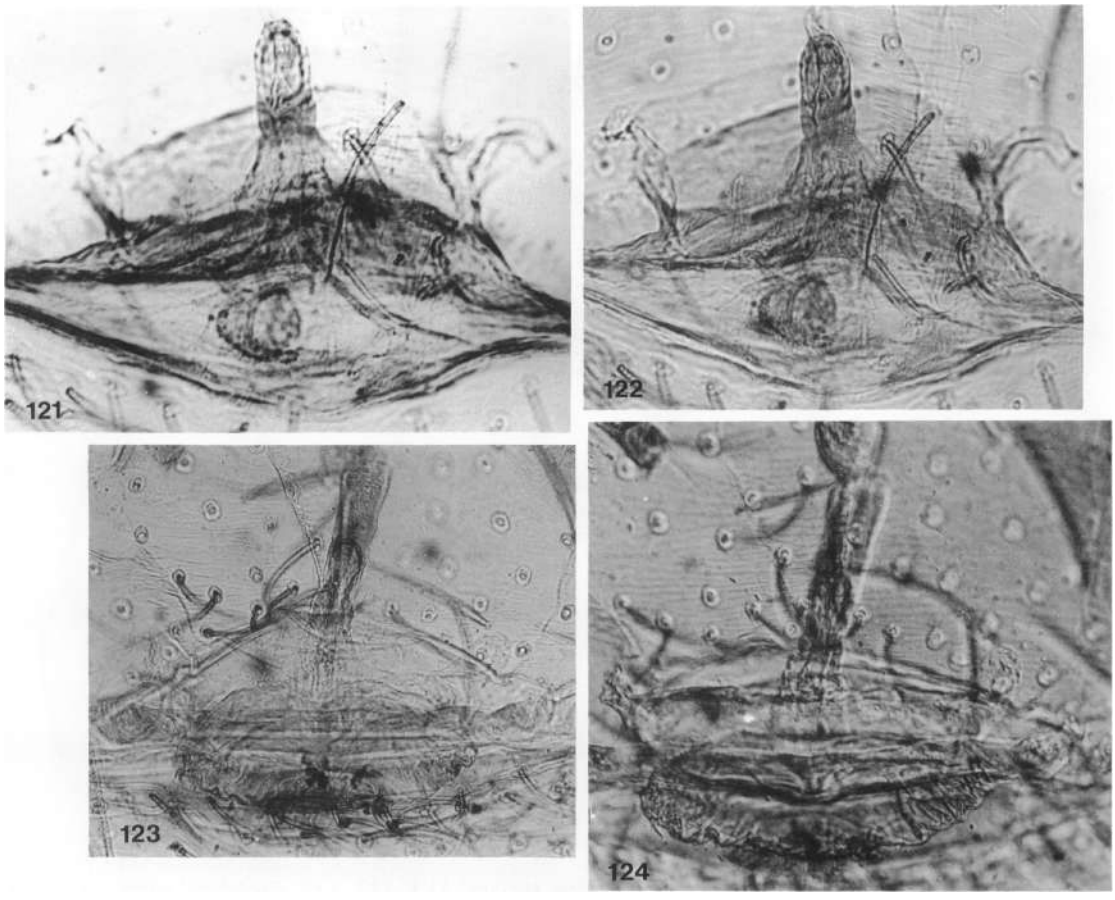
FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Osorno, Chile.

Osornolobus thayerae, new species
Figures 113–116, 121, 122

TYPES: Male holotype taken in a Berlese sample of leaf and log litter in a *Nothofagus*



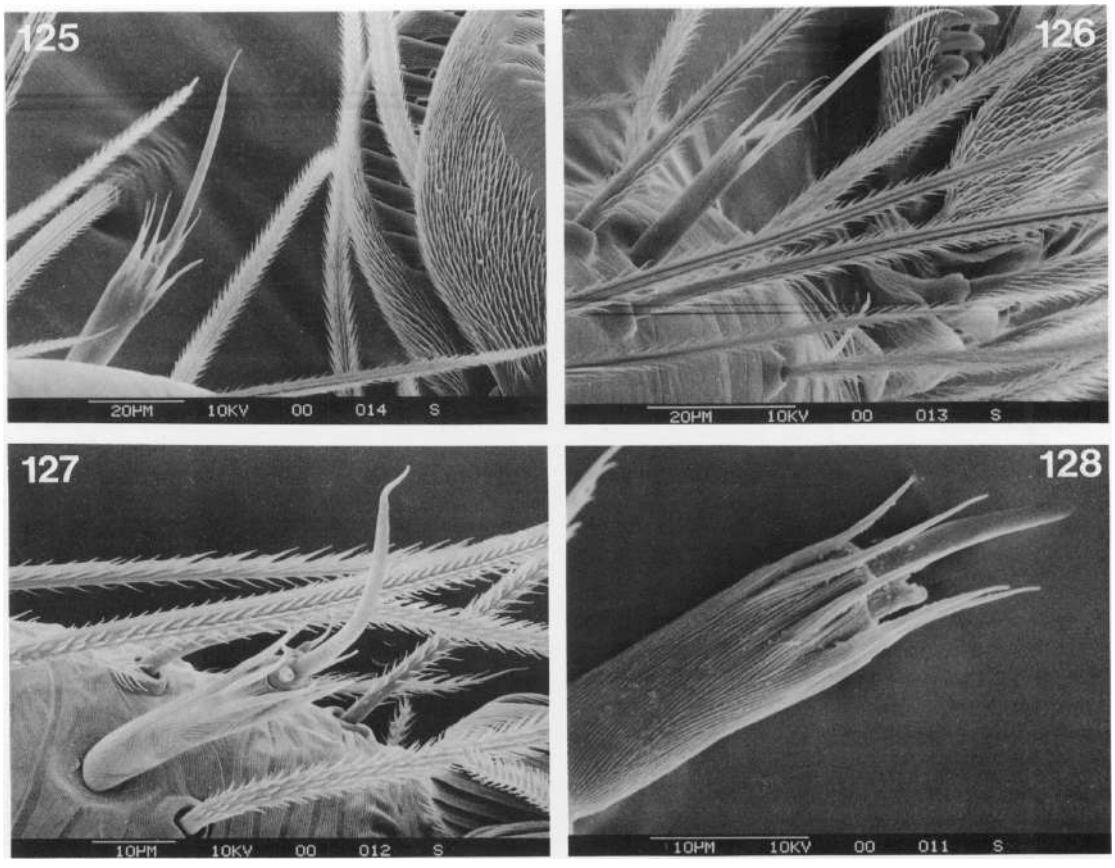
FIGS. 121–124. Internal female genitalia of *Osornolobus*. 121, 122. *O. thayerae*, new species. 123, 124. *O. cautin*, new species.

forest at an elevation of 720 m, and female paratype taken in a window trap in a Valdivian rainforest at an elevation of 690 m, both on the Antillanca road in the Parque Nacional Puyehue, Osorno, Chile (December 18–24, 1982; A. Newton and M. Thayer), deposited in AMNH.

ETYMOLOGY: The specific name is a patronym in honor of Dr. Margaret Thayer, collector of the types and many other orsolobids.

DIAGNOSIS: The closely appressed pair of terminal elements on the male palp (figs. 115, 116) and the dusky sternum and heavily pigmented abdomen of the female are diagnostic.

MALE: Total length 2.79. Carapace 1.18 long, 0.89 wide. Abdomen 1.32 long, 0.84 wide. Coloration as in *O. chaiten* except sternum completely covered with scattered purple pigment and dorsum of abdomen with lateral edges of six posterior chevrons fused into single longitudinal stripes on each side. Eye length ratio, ALE:PME:PLE, 5:6:6; PME separated by one-fourth their width from ALE; PLE separated by almost three times the PME length. Chelicerae 0.49 long, distally narrowed, without teeth on either margin but with fang elongated, directed ventrally. Sternum longer than wide (6:5), narrowly truncated posteriorly. Leg spination: tibiae: III p1-1-0, v0-1p-2, r0-1-0; IV p1-1-0, v0-1p-2, r1-1-0; metatarsi: III p0-0-1, v0-0-2, r0-0-1; IV p1-1-1, v2-2-2, r1-1-1. Tarsal organ elongate, with long, distally curved receptor spine (fig. 113). Claws as in *O. canan*.



FIGS. 125–128. Tarsal organ from leg I (except fig. 126, from leg III) of *Osornolobus*. 125. *O. antillanca*, new species. 126. *O. anticura*, new species. 127. *O. cautin*, new species. 128. *O. penai*, new species.

	I	II	III	IV	Palp
Femur	0.88	0.85	0.79	1.06	0.29
Patella	0.43	0.40	0.27	0.35	0.18
Tibia	0.79	0.69	0.53	0.79	0.34
Metatarsus	0.73	0.65	0.61	0.90	—
Tarsus	0.33	0.26	0.25	0.32	0.18
Total	3.16	2.85	2.45	3.42	0.99

Palpal bulb bifid terminally (figs. 115, 116)

FEMALE: As in male except for the following. Total length 2.32. Carapace 1.08 long, 0.86 wide. Abdomen 1.37 long, 0.94 wide. Most anterior abdominal chevron fused to anterior purple pigment, so that only five posterior chevrons appear, only single most anterior of which extends down sides to spinnerets; most posterior chevron completely encircles spinnerets. Chelicerae 0.50 long, with two promarginal and two retromarginal teeth accompanied by two more proximally situated retromarginal denticles. Leg spination: tibiae: III p1-1-0, v1p-1p-2, r1-1-0; IV p1-1-0, v2-2-2, r1-1-0; metatarsi: III p1-0-1, v2-2-2, r1-0-1; IV as in male. Tarsal organ elongate, with receptor spine shorter, thicker than in male (fig. 114). Claws of leg IV elongated.

	I	II	III	IV	Palp
Femur	1.08	0.92	0.81	1.09	0.36
Patella	0.43	0.38	0.37	0.42	0.22
Tibia	0.86	0.79	0.64	0.91	0.24
Metatarsus	0.85	0.77	0.73	0.99	—
Tarsus	0.36	0.38	0.31	0.40	0.34
Total	3.58	3.24	2.86	3.81	1.16

Palpal tibia with one prolateral spine, tarsus with two prolateral and two distal ventral

spines. Internal genitalia as in figures 121, 122.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Osorno, Chile.

Osornolobus antillanca, new species
Figures 117, 118, 125

TYPE: Male holotype taken in a window trap in a *Nothofagus* forest at an elevation of 720 m on the Antillanca road in the Parque Nacional Puyehue, Osorno, Chile (December 18–24, 1982; A. Newton and M. Thayer), deposited in AMNH.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: The pair of opposing protuberances at the base of the embolus (figs. 117, 118) are diagnostic.

MALE: Total length 2.88. Carapace 1.17 long, 1.02 wide. Abdomen 1.41 long, 0.86 wide. Coloration as in *O. chaiten* except pars cephalica with additional purple pigment along midline and dorsal abdominal chevrons fused at sides. Eye length ratio, ALE: PME:PLE, 4:5:4; PME separated by one-fifth their diameter from ALE; PLE separated by slightly more than twice the PME length. Chelicerae 0.59 long, with two promarginal and two retromarginal teeth. Sternum longer than wide (9:8), broadly truncated posteriorly. Leg spination: tibiae: III p1-1-0, v0-0-2, r1-1-0; IV p1-1-1, v1p-1p-2, r1-0-1; metatarsi: III p1-1-1, v2-2-2, r1-0-1; IV p1-1-1, v2-2-2, r1-1-1. Tarsal organ elongate, with long, distally narrowed receptor spine (fig. 125). Claws short (except on leg I), with teeth of outer row restricted to proximal, moderately expanded lateral flange.

	I	II	III	IV	Palp
Femur	1.37	1.30	1.15	1.56	0.47
Patella	0.50	0.50	0.40	0.52	0.24
Tibia	1.22	1.17	0.92	1.32	0.30
Metatarsus	1.19	1.01	0.97	1.50	—
Tarsus	0.48	0.49	0.38	0.47	0.22
Total	4.76	4.47	3.82	5.37	1.23

Palpal bulb with prolateral terminal twist (figs. 117, 118).

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Osorno, Chile.

Osornolobus anticura, new species
Figures 119, 120, 126

TYPE: Male holotype taken in a window trap at an elevation of 270 m in a Valdivian rainforest 4.1 km west of Anticura, Osorno, Chile (December 19–25, 1982; A. Newton and M. Thayer), deposited in AMNH.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: The three-pronged terminal elements of the palp (figs. 119, 120) are diagnostic.

MALE: Total length 1.98. Carapace 0.97 long, 0.74 wide. Abdomen 0.99 long, 0.57 wide. Coloration as in *O. chaiten* except pars cephalica with additional purple pigment along midline, sternum covered with scattered purple pigment, abdominal chevrons fused laterally, and two most posterior abdominal chevrons fused into ring encircling spinnerets. Eye length ratio, ALE:PME:PLE, 2:3:2; PME separated by one-third their width from ALE; PLE separated by slightly more than twice the PME length. Chelicerae 0.45 long, with two promarginal and three retromarginal teeth. Sternum longer than wide (9:8), broadly truncated posteriorly. Leg spination: tibiae: III p1-1-0, v1p-2-2, r1-1-0; IV p1-1-0, v2-2-2, r1-1-1; metatarsi III, IV p1-1-1, v2-2-2, r1-0-1. Tarsal organ elongate, with long, sinuous receptor spine (fig. 126). Claws as in *O. canan.*

	I	II	III	IV	Palp
Femur	—	—	0.82	1.08	0.28
Patella	—	—	0.32	0.34	0.16
Tibia	—	—	0.59	0.89	0.22
Metatarsus	—	—	0.65	0.95	—
Tarsus	—	—	0.29	0.34	0.23
Total	—	—	2.67	3.60	0.89

Palpal bulb elongate, with three distal prongs (figs. 119, 120).

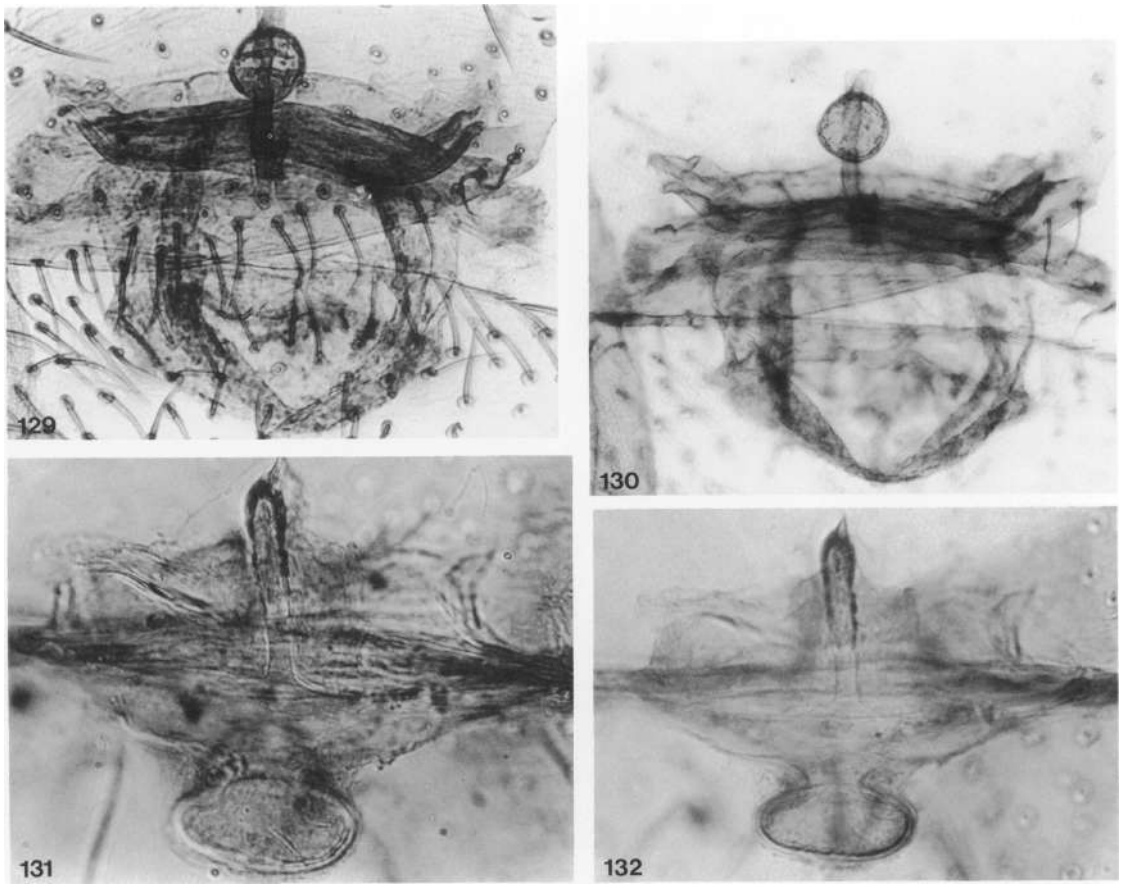
FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Osorno, Chile.

Osornolobus cautin, new species
Figures 123, 124, 127

TYPE: Female holotype from Estero Chaulica, Cautín, Chile (January 25, 1980; T. Cekalovic), deposited in AMNH.



FIGS. 129–132. Internal female genitalia of *Osornolobus*. 129, 130. *O. penai*, new species. 131, 132. *O. concepcion*, new species.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

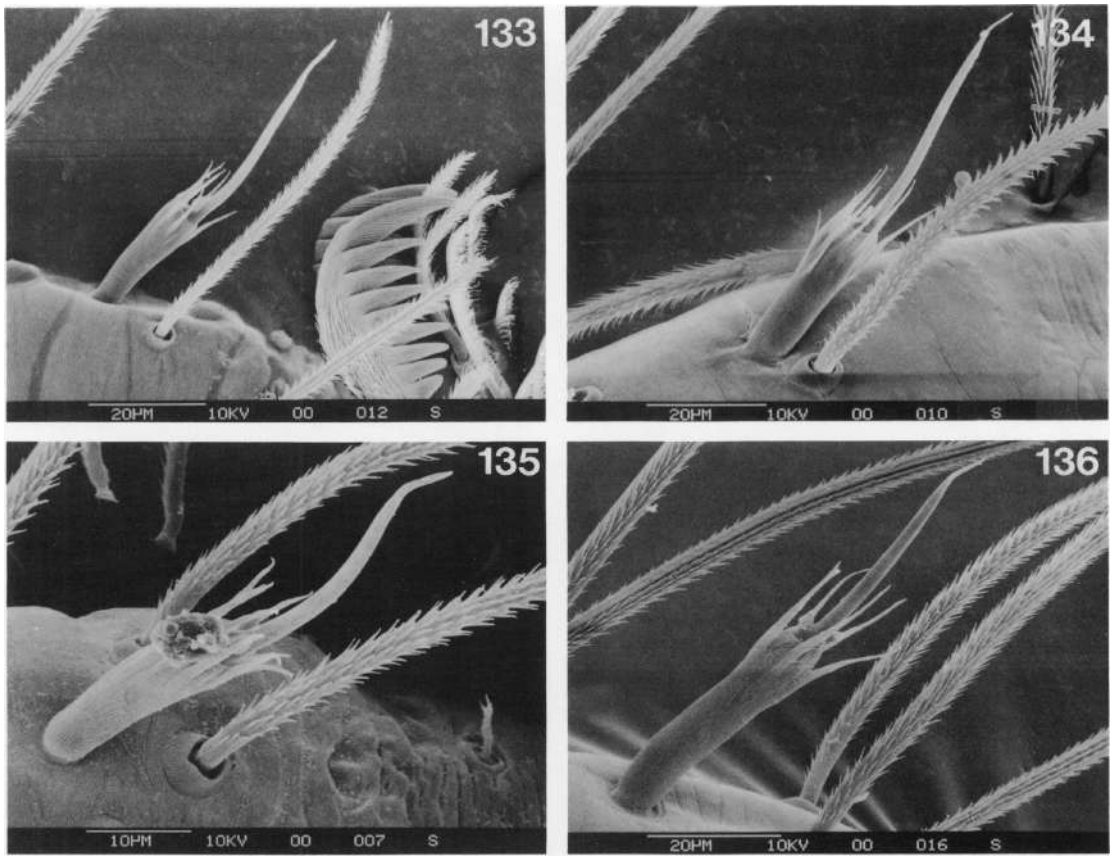
DIAGNOSIS: The sternal pigmentation pattern described below is diagnostic.

MALE: Unknown.

FEMALE: Total length 2.27. Carapace 1.05 long, 0.90 wide. Abdomen 1.25 long, 0.83 wide. Coloration as in *O. chaiten* except pars cephalica with additional purple pigment along midline, sternum with lateral margins and posterior edges of coxal elevations outlined with purple pigment, dorsal abdominal chevrons fused laterally, and posterior chevron encircling spinnerets. Eye length ratio, ALE:PME:PLE, 4:5:4; PME separated by one-third their width from ALE; PLE separated by 2.5 times the PME length. Chelicerae 0.47 long, with two promarginal and two retromarginal teeth. Sternum longer than wide (19:17), broadly truncated posteriorly. Leg spination: tibiae: III p1-1-0, v1p-1p-2, r1-1-0; IV p1-1-0, v1p-1p-2, r0-1-0; metatarsi: III p1-0-1, v2-2-2, r1-0-1; IV p1-1-1, v1p-2-2, r1-1-1. Tarsal organ elongate, with long, distally curved receptor spine (fig. 127). Claws as in *O. canan*, with one outer tooth much longer than others.

	I	II	III	IV	Palp
Femur	1.04	0.88	0.81	1.08	0.32
Patella	0.47	0.44	0.35	0.43	0.14
Tibia	0.95	0.79	0.54	0.92	0.21
Metatarsus	0.84	0.73	0.56	0.95	—
Tarsus	0.40	0.34	0.31	0.40	0.34
Total	3.70	3.18	2.57	3.78	1.01

Palpal tibia with one dorsal and one prolat-



FIGS. 133–136. Tarsal organ from leg I of *Osornolobus*. 133. *O. nahuelbuta*, new species. 134. *O. malalcahuello*, new species. 135. *O. concepcion*, new species. 136. *O. trancas*, new species.

eral spine, tarsus with two prolateral and two distal ventral spines. Internal genitalia as in figures 123, 124.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Cautín, Chile.

Osornolobus penai, new species
Figures 128–130

TYPE: Female holotype form Chacamo, Cautín, Chile (February 16–24, 1981; L. E. Peña), deposited in AMNH.

ETYMOLOGY: The specific name is a patronym in honor of Dr. Luis E. Peña, collector of the holotype and many other interesting Chilean spiders.

DIAGNOSIS: Females can be distinguished from those of *O. cautin, O. thayerae, O. chapo,* and *O. magallanes* by the unmarked carapace, from those of *O. canan* by having only six posterior chevrons on the abdominal dorsum, from those of *O. chiloe* by not having the spinnerets encircled by purple pigment, and from those of *O. concepcion* by the presence of a median purple longitudinal stripe on the abdominal venter.

MALE: Unknown.

FEMALE: Total length 3.29. Carapace 1.31 long, 1.06 wide. Abdomen 1.71 long, 1.09 wide. Coloration as in *O. chiloe* except abdominal venter with long median and two short paramedian purple patches and spinnerets not encircled by purple pigment. Eye length ratio, ALE:PME:PLE, 5:6:5; PME separated by one-fourth their width from ALE; PLE separated by 2.5 times the PME length. Chelicerae 0.52 long, with two promarginal and two widely separated retromarginal teeth.

Sternum longer than wide (7:6), broadly truncated posteriorly. Leg spination: tibiae III, IV p1-1-0, v1p-1p-2, r1-1-0; metatarsi: III p1-1-1, v2-2-2, r1-0-1; IV p1-1-1, v1r-2-2, r0-1-1. Tarsal organ elongate, with thick, moderately long receptor spine (fig. 128). Claws short, with outer teeth restricted to large lateral flange occupying proximal half.

	I	II	III	IV	Palp
Femur	1.22	1.08	1.01	1.35	0.48
Patella	0.52	0.45	0.40	0.47	0.21
Tibia	1.12	1.03	0.78	1.08	0.29
Metatarsus	1.12	0.96	0.90	1.22	—
Tarsus	0.42	0.43	0.31	0.42	0.47
Total	4.40	3.95	3.40	4.54	1.45

Palpal tibia with four prolateral spines, tarsus with one prolateral and two distal ventral spines. Internal genitalia with spherical anterior receptaculum (figs. 129, 130).

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Cautín, Chile.

Osornolobus nahuelbuta, new species
Figures 133, 137, 138

TYPE: Male holotype from Parque Nacional Nahuelbuta, Malleco, Chile (November 19, 1981; T. Cekalovic), deposited in AMNH.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: The forklike terminal elements of the palpal bulb (figs. 137, 138) are diagnostic.

MALE: Total length 1.80. Carapace 0.86 long, 0.75 wide. Abdomen 0.86 long, 0.58 wide. Coloration as in *O. chiloe* except most anterior dorsal abdominal chevron almost entirely fused to anterior purple patch, abdominal venter with transverse purple stripe immediately behind epigastric furrow, and spinnerets not encircled by purple pigment. Eye length ratio, ALE:PME:PLE, 6:5:5; PME separated by two-fifths their width from ALE; PLE separated by three times the PME length. Chelicerae 0.29 long, with two promarginal and two retromarginal teeth. Sternum longer than wide (8:7), broadly truncated posteriorly. Leg spination: tibiae: III p1-1-0, v1p-1p-2, r1-1-0; IV p1-1-0, v1p-1p-2, r1-1-1; metatarsi: III p1-1-1, v2-2-2, r1-0-1; IV p1-1-1, v2-2-2, r1-1-1. Tarsal organ elongate, with receptor spine longer than base (fig. 133). Claws as in *O. canan.*

	I	II	III	IV	Palp
Femur	0.79	0.72	0.61	0.83	0.30
Patella	0.34	0.29	0.23	0.30	0.14
Tibia	0.68	0.60	0.48	0.66	0.19
Metatarsus	0.65	0.54	0.51	0.79	—
Tarsus	0.35	0.34	0.25	0.32	0.20
Total	2.81	2.49	2.08	2.90	0.83

Palpal bulb with two straight terminal prongs (figs. 137, 138).

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Malleco, Chile.

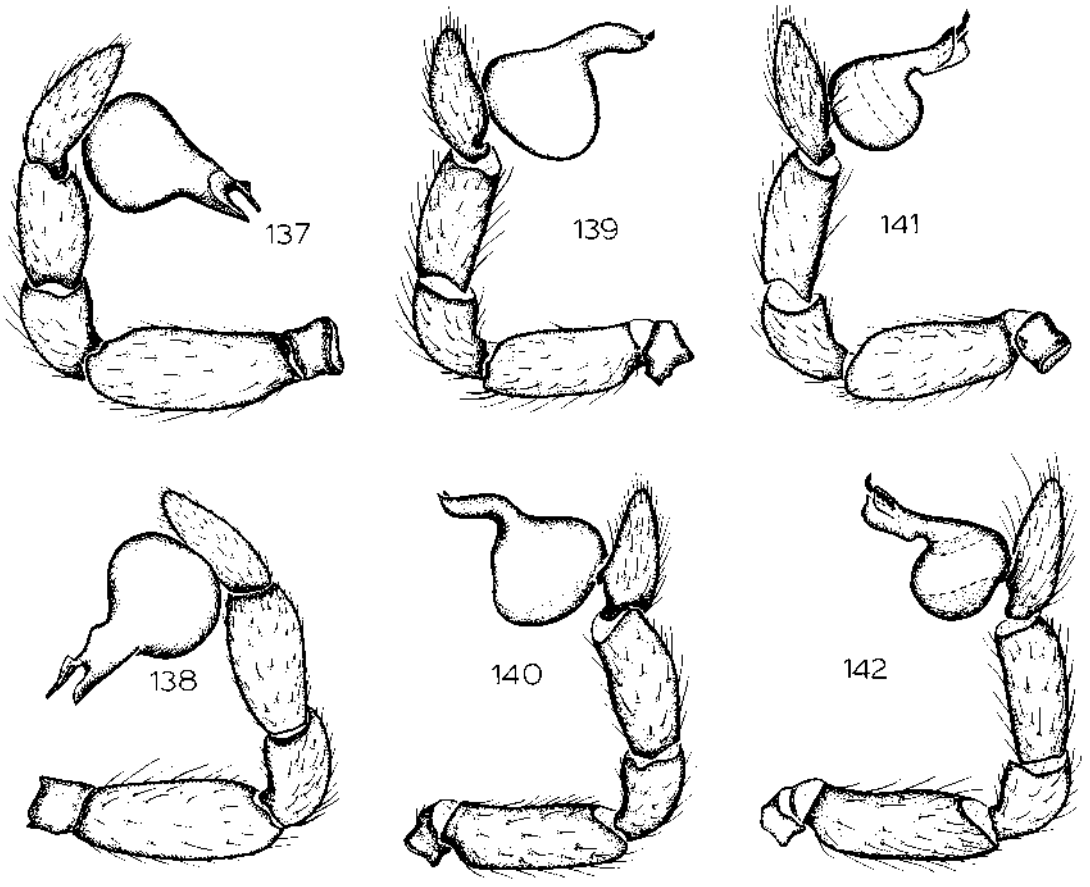
Osornolobus malalcahuello, new species
Figures 134, 139, 140

TYPE: Male holotype taken in a window trap at an elevation of 1080 m in a *Nothofagus dombeyi* and *Chusquea* forest 6.5 km east of Malalcahuello, Malleco, Chile (December 13–31, 1982; A. Newton and M. Thayer), deposited in AMNH.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: The thick, sinuous embolus (figs. 139, 140) is diagnostic.

MALE: Total length 2.86. Carapace 1.33 long, 0.99 wide. Abdomen 1.48 long, 1.06 wide. Coloration as in *O. chaiten* except pars cephalica with additional purple pigment along midline, pars thoracica without traces of radiating marks, and abdominal pattern indistinct (pigment pulled away from cuticle) but with dorsal chevrons apparently fused laterally and venter almost completely pigmented. Eye length ratio, ALE:PME:PLE, 5:6:6; PME separated by one-third their width from ALE; PLE separated by 2.5 times the PME length. Chelicerae 0.54 long, with two promarginal and two retromarginal teeth. Sternum longer than wide (11:10), broadly truncated posteriorly. Leg spination: tibiae: III p1-1-0, v0-1p-2, r1-1-0; IV p1-1-0, v1p-1p-2, r1-1-0; metatarsi: III p1-1-1, v2-2-2, r1-1-1; IV p1-2-1, v2-2-2, r1-1-1. Tarsal organ elongate, receptor spine longer than base (fig. 134). Claws as in *O. penai.*



FIGS. 137–142. Left male palp of *Osornolobus*. 137, 138. *O. nahuelbuta*, new species. 139, 140. *O. malalcahuello*, new species. 141, 142. *O. trancas*, new species. 137, 139, 141. Prolateral view. 138, 140, 142. Retrolateral view.

	I	II	III	IV	Palp
Femur	1.35	1.31	1.11	1.53	0.43
Patella	0.56	0.50	0.47	0.50	0.21
Tibia	1.24	1.15	0.86	1.24	0.29
Metatarsus	1.15	1.09	1.07	1.44	—
Tarsus	0.52	0.52	0.40	0.50	0.28
Total	4.82	4.57	3.91	5.21	1.21

Palpal bulb pyriform, with thick, sinuous embolus (figs. 139, 140).

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Malleco, Chile.

Osornolobus concepcion, new species
Figures 131, 132, 135

TYPE: Female holotype taken in a window trap at an elevation of 360 m in a *Pinus* forest 6 km south of San Pedro, Concepción, Chile (December 12, 1982–January 2, 1983; A. Newton and M. Thayer), deposited in AMNH.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females can be distinguished from those of *O. cautin, O. thayerae, O. chapo,* and *O. magallanes* by the unmarked carapace, from those of *O. canan* by having only six posterior chevrons on the abdominal dorsum, from those of *O. chiloe* by not having the spinnerets encircled by purple pigment, and from those of *O. penai* by lacking a median purple longitudinal stripe on the abdominal venter.

MALE: Unknown.

FEMALE: Total length 2.61. Carapace 1.00

long, 0.79 wide. Abdomen 1.54 long, 0.94 wide. Coloration as in *O. chiloe* except anterior purple patch invaginated at sides, almost forming seventh chevron, and spinnerets not encircled by pigment. Eye length ratio, ALE:PME:PLE, 6:6:7; PME separated by half their width from ALE; PLE separated by more than three times the PME length. Chelicerae 0.47 long, with two promarginal and two widely spaced retromarginal teeth. Sternum longer than wide (17:16), broadly truncated posteriorly. Leg spination: tibiae III, IV p1-1-0, v1p-1p-2, r1-1-0; metatarsi: III p1-1-1, v2-0-2, r0-1-1; IV p1-1-1, v2-2-2, r1-1-1. Tarsal organ elongate, with long, sinuous receptor spine (fig. 135). Claws as in *O. canan.*

	I	II	III	IV	Palp
Femur	0.83	0.81	0.68	0.97	0.29
Patella	0.45	0.42	0.29	0.43	0.16
Tibia	0.73	0.68	0.56	0.79	0.18
Metatarsus	0.58	0.58	0.58	0.84	—
Tarsus	0.40	0.36	0.30	0.36	0.29
Total	2.99	2.85	2.41	3.39	0.92

Palpal tibia with three prolateral spines, tarsus with two prolateral and one distal ventral spines. Internal genitalia with small, oval posterior secretory plate (figs. 131, 132).

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Concepción, Chile.

Osornolobus trancas, new species
Figures 136, 141, 142

TYPE: Male holotype taken in a window trap in a *Nothofagus* forest at an elevation of 1250 m at Las Trancas, 19.5 km east-southeast of Recinto, Nuble, Chile (December 10, 1982–January 3, 1983; A. Newton and M. Thayer), deposited in AMNH.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: The dorsal embolar sheath (figs. 141, 142) is diagnostic.

MALE: Total length 2.95. Carapace 1.30 long, 0.99 wide. Abdomen 1.55 long, 1.01 wide. Carapace brownish yellow, with dark lateral margins but otherwise unmarked; chelicerae brownish yellow; mouthparts and sternum yellow; abdominal pattern indistinct (pigment pulled away from cuticle), with scattered purple pigment dorsally but none detected ventrally; legs and palpi brownish yellow. Eye length ratio, ALE:PME:PLE, 8:9:8; PME separated by almost half their width from ALE; PLE separated by almost three times the PME length. Chelicerae 0.59 long, with two promarginal and two retromarginal teeth. Sternum longer than wide (21:19), broadly truncated posteriorly. Leg spination: tibiae III, IV p1-1-1, v1p-2-2, r1-1-1; metatarsi: III p1-1-1, v2-2-2, r1-0-1; IV p1-1-1, v2-2-2, r1-1-1. Tarsal organ greatly elongate, with long receptor spine (fig. 136). Claws as in *O. chaiten.*

	I	II	III	IV	Palp
Femur	—	1.17	1.08	1.44	0.43
Patella	—	0.48	0.43	0.48	0.22
Tibia	—	1.08	0.85	1.20	0.30
Metatarsus	—	1.07	0.90	1.30	—
Tarsus	—	0.37	0.44	0.47	0.27
Total	—	4.17	3.70	4.89	1.22

Palpal bulb pyriform, embolus covered by dorsal sheath (figs. 141, 142).

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Nuble, Chile.

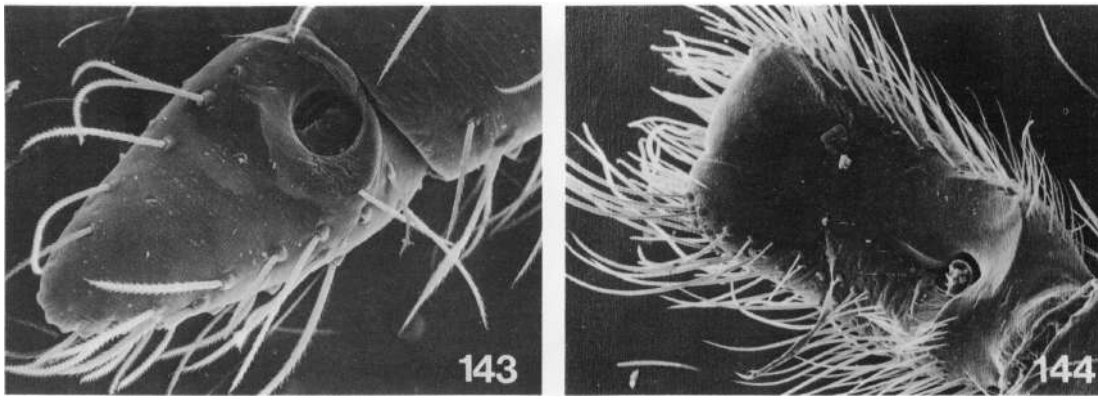
THE AUSTRALIAN FAUNA

Although the only orsolobids previously recorded from the Australian region are from Tasmania (six species described as oonopids by Hickman, 1930, 1932, 1979), the mainland fauna is extensive. As with the Chilean orsolobids, virtually every locality sampled to date has yielded new species; future collecting will no doubt increase the number of taxa significantly. True oonopids also abound in Australia, of course, but the few records of endemic dysderids are erroneous. *Dysdera australiensis* Rainbow, originally described from Australia and subsequently recorded from New Zealand, is in fact the cosmopolitan *D. crocata* and was undoubtedly introduced by man into both countries.

TASMANOONOPS HICKMAN

Tasmanoonops Hickman, 1930, p. 97 (type species by original designation *Tasmanoonops alipes* Hickman).

DIAGNOSIS: *Tasmanoonops* resembles *Orsolobus* in having an unmarked abdomen and



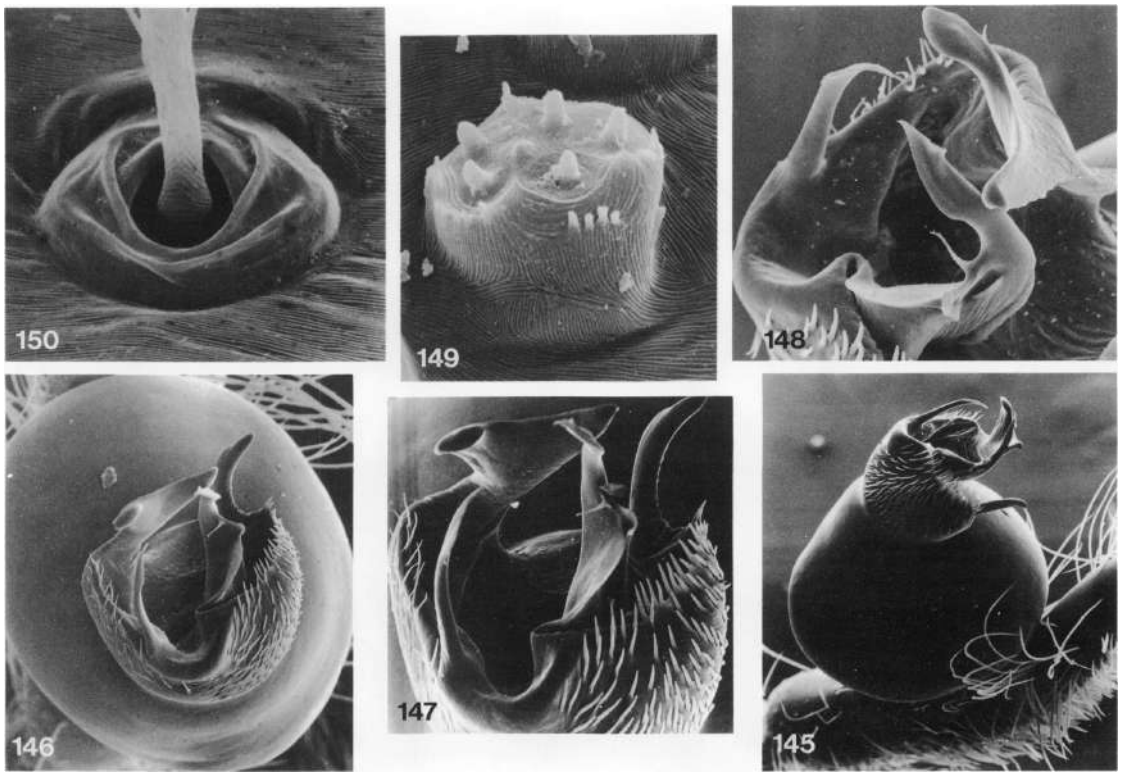
FIGS. 143, 144. Cymbium of male palp, showing the typical orsolobid form and the distally obtuse form commonly found in *Tasmanoonops*. 143. *Ascuta media* Forster. 144. *Tasmanoonops alipes* Hickman.

(usually) spines on tibiae and metatarsi III and IV, but can be distinguished by having only one tooth on each cheliceral margin.

DESCRIPTION: Moderately sized to large orsolobids (total length 1.7–6.3) with carapace and appendages light yellow to brown, without markings, abdomen creamy white, unpigmented, covered with short, plumose hairs. Chelicerae with one tooth on each margin near tip of fang (fig. 873). Sternum scutiform, slightly longer than wide. Colulus labiate, strongly setose; basal segment of anterior spinnerets of females sometimes with group of dark denticles on ventral surface and in row along distal margin (figs. 882, 883). Female genitalia with posterior receptaculum (except in *T. parinus*) as extensive, thin-walled sac enclosed in thin layer of secretory tissue, secretory cells discharging into receptaculum from internal lobes; anterior portion with prominent sclerotized plates and median rod acting as attachment points for extensive musculature, some species with anterior receptacula individually enclosed in secretory tissue opening at base of median rod but in other species separate receptacula absent and secretory gland opens directly into lumen within median rod. Spines usually present on tibiae and metatarsi III and IV (and sometimes I and II, and femora, as well). Claws short, with outer teeth not extending beyond usually prominent (sometimes lacking) lateral flanges; tufts present. Tarsal organ with wide range of forms (see below); proprioreceptor bristles usually with lateral projections; trichobothrial base smooth or transversely ridged (figs. 150, 155, 230, 280, 296, 312, 318). Palpal claw of female smooth. Segments of male palp robust, cymbium often distally obtuse (fig. 144), bulb large, embolus (when distinguishable) usually tubular, associated with accessory processes (except in *T. parinus*). Posterior spiracles near epigastric furrow, tracheal trunks not connected.

DISCUSSION: Although one species has been collected on the seashore above the high tide line, these spiders are generally found in rainforest, where they live in litter or associated with rotten logs and fungi. As with other groups of Australian spiders restricted to such habitats, they show a remarkably high level of endemicity (cf. Raven, 1978). The known ranges of each species are extremely limited and their distribution is generally allopatric.

As in most orsolobids, the nongenitalic characters are not strongly differentiated. An exception is the tarsal organ; the diversity of this organ within *Tasmanoonops* contrasts strongly with South American and New Zealand genera, in which the tarsal organ, although showing some specific differences, is generally of a characteristic form. This suggests that a number of genera may be represented among the species we include in *Tasmanoonops*, but because we have not been able to correlate the tarsal organ diversity with genitalic or other characters we have for the present retained in a single genus all the



FIGS. 145–150. *Tasmanoonops alipes* Hickman. 145–148. Male palp. 149. Tarsal organ. 150. Trichobothrium.

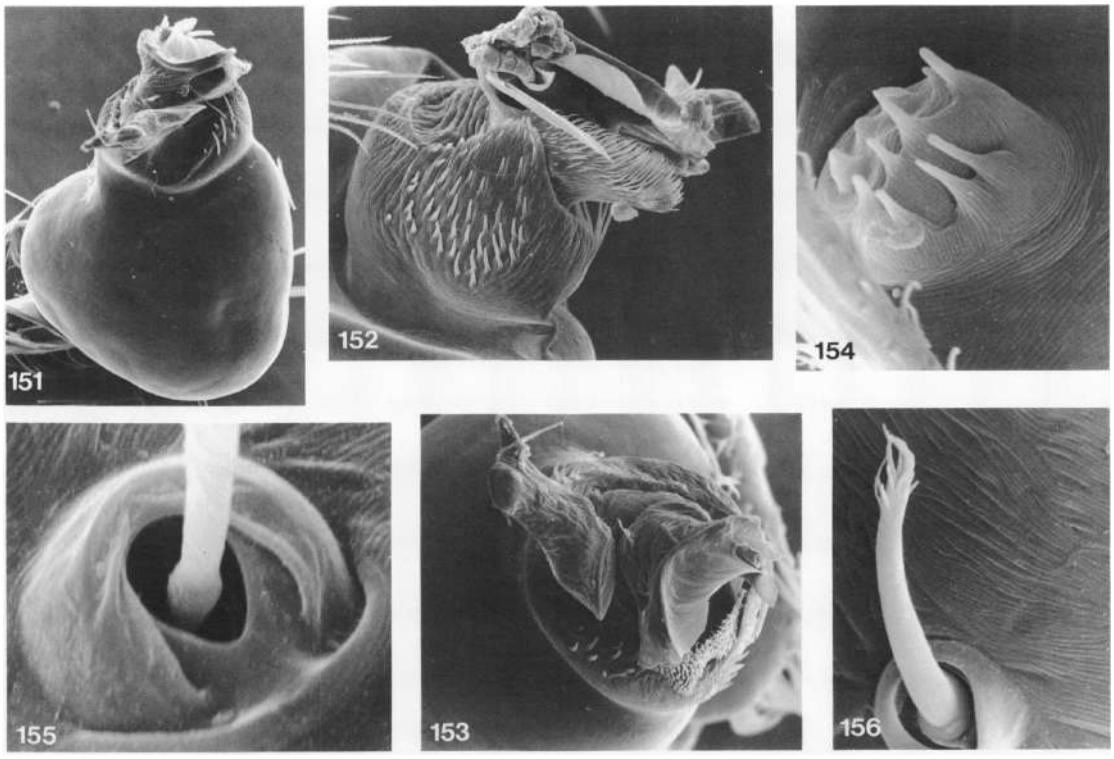
Australian species with an unpigmented abdomen.

Although the collections available for study cover a wide area of western, southern, and eastern Australia and thus broadly encompass the main regions where these spiders might be expected to occur, the actual material is sparse and few specimens have been available from any given locality. A number of species are described from single specimens, in some instances from a male and in others from a female. This expedient is made possible only by the specific differences found in the tarsal organ and the fact that, so far as known, both sexes always share the same tarsal organ configuration.

THE DESCRIBED TASMANIAN SPECIES

Figures 144–156, 199, 214, 846–848, 856, 873

The type species, *Tasmanoonops alipes* Hickman (1930), is a large spider (total length 6.2) but was placed by Hickman in the Oonopidae rather than the Dysderidae on the basis of the bipectinate claws associated with a distinct onychium and the absence of a claw on the female pedipalp. The palpal claw is, in fact, present in this species but as in all orsolobids it is small and easily overlooked. Hickman also recorded the ventral pad below the paired claws and correctly interpreted this structure as a vestige of the third claw. The original descriptions of the female (Hickman, 1930) and male (Hickman, 1932) are full and otherwise accurate; we provide illustrations of the main characters of the species as a basis for comparison with the new taxa described below. The male bulb is pyriform with the distal portion constricted (fig. 145). The embolus is clavate with the duct opening subdistally (figs. 146, 147). The distal portion of the bulb bearing the embolus and accessory processes is strongly denticulate, with three separate processes in addition to the embolus



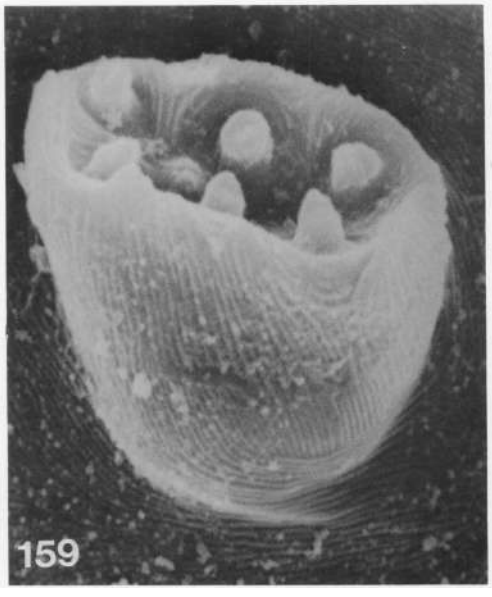
FIGS. 151–156. *Tasmanoonops magnus* Hickman. 151–153. Male palp. 154. Tarsal organ. 155. Trichobothrium. 156. Proprioreceptor bristle.

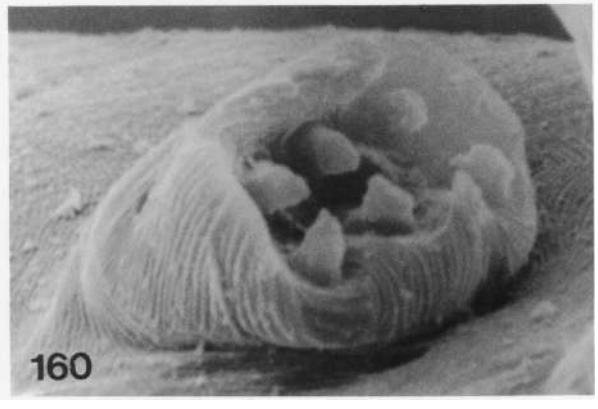
(fig. 148). The tarsal organ is low, with six receptor lobes but few marginal cuticular lobes (fig. 149). The unusually large number of receptor lobes (found also in the Gradungulidae) is probably a primitive character and this form could be nominated as representative of the plesiomorphic orsolobid tarsal organ. The trichobothrial base has a typical smooth posterior hood depressed across the median surface so that two ridges are present (fig. 150). The proprioreceptor bristles have a number of lateral teeth in addition to distal branching (fig. 848). The anterior portion of the female genitalia (figs. 199, 214) has a single secretory gland associated with the median rod. The posterior receptaculum is large and membranous, with numerous groups of secretory lobes distributed over the surface.

Recently, Hickman (1979) described three additional species of *Tasmanoonops* from Tasmania, none of which have been found in collections from the mainland of Australia and which are all probably endemic to Tasmania. Both *T. fulvus* and *T. ornatus* are clearly distinct from any of the species described below; *T. magnus,* however, appears to be closely related to *T. grayi,* new species, from New South Wales and *T. buang,* new species, from Victoria. Through the kindness of Dr. Hickman, we have been able to examine specimens of *T. magnus* and illustrate its diagnostic characters (figs. 151–156). The female genitalia have not been examined and remain unknown for all the described species other than *T. alipes.* The descriptions and illustrations provided by Hickman are otherwise full and we have not repeated his information in the present paper.

Tasmanoonops insulanus, new species
Figures 157–160

TYPE: Male holotype taken by pyrethrum fogging of tree ferns in a *Nothofagus* forest at an elevation of 750 m on the west side of Lake St. Clair, Tasmania (January 25–29,





FIGS. 157–160. *Tasmanoonops insulanus*, new species. 157, 158. Male palpal bulb. 159, 160. Tarsal organ from leg I.

1980; A. Newton and M. Thayer), deposited in QMB.

ETYMOLOGY: The specific name refers to the occurrence of the species on the island of Tasmania.

DIAGNOSIS: This species is closely related to *T. alipes*, sharing with it the six receptor lobes on the tarsal organ that set these two species apart from all others. It can be separated from *T. alipes* by the smaller size and the different form of the male palpal bulb.

MALE: Total length 3.68. Carapace 1.60 long, 1.20 wide. Abdomen 2.00 long, 1.04 wide. Eye sizes and grouping typical. Leg spination: tibiae: III p1-1-1, v0-0-1, r1-1-1; IV p0-1-0, v0-1-2, r0-1-0; metatarsi: III p1-1-1,

v1-2-2, r1-1-1; IV p0-1-1, v1-1-2, r0-1-1. Tarsal organ (figs. 159, 160) apparently without cuticular lobes on lateral surface; proprioreceptor bristles and bothria as in *T. alipes*. Claws with lateral flanges well developed but not as prominent as in *T. alipes*.

	I	II	III	IV	Palp
Femur	1.84	1.92	1.68	1.08	0.48
Patella	0.64	0.64	0.56	0.66	0.32
Tibia	1.44	1.42	1.12	1.52	0.24
Metatarsus	1.60	1.60	1.20	1.68	—
Tarsus	0.56	0.48	0.48	0.64	0.48
Total	6.08	6.06	5.04	5.58	1.52

Palpal bulb markedly different from *T. alipes* (figs. 157, 158), distal portion bearing process relatively smaller, fused so that separate elements of structure difficult to separate; basal process characteristic of *T. alipes* lacking.

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Tasmania.

Tasmanoonops grayi, new species

Figures 161–164, 198, 202

TYPES: Male holotype and female paratype from purse webs in moist rotting logs and grass on Mount Edwards, Boyd Plateau, New South Wales, Australia (May 15, 1971; M. R. Gray), deposited in AMS.

ETYMOLOGY: The specific name is a patronym in honor of Mr. M. R. Gray of the Australian Museum, collector of the types and other orsolobids.

DIAGNOSIS: This species can be separated from *T. alipes* by the simple tubular embolus, the smaller number of receptor lobes on the tarsal organ, and the absence of denticles on the female spinnerets.

MALE: Total length 4.48. Carapace 1.96 long, 1.21 wide. Abdomen 2.41 long, 1.30 wide. Lateral eyes equal in size, PME slightly larger; PLE separated by 2.5 times their diameter. At least leg IV without spines (teratological?). Tarsal organ relatively low, with three small receptor lobes and few cuticular lobes on posterior margin (fig. 162); proprioreceptor bristles similar to those of *T. alipes*, with lateral spines (fig. 161). Claws typical (fig. 198).

	I	II	III	IV	Palp
Femur	2.22	2.20	1.89	1.91	0.87
Patella	0.83	0.89	—	0.84	0.60
Tibia	1.92	1.96	—	1.84	0.69
Metatarsus	2.13	2.18	—	2.14	—
Tarsus	0.72	0.76	—	0.73	0.42
Total	7.82	7.99	—	7.46	2.58

Palpal bulb pyriform, distal portion differentiated but not constricted as in *T. alipes*, closely covered with short spines; embolus tubular, slender, directed transversely (figs. 163, 164).

FEMALE: As in male, except for the following. Total length 5.53. Carapace 2.22 long, 1.68 wide. Abdomen 3.21 long, 1.88 wide. Anterior spinnerets with denticles on ventral surface of basal segment. Leg spination: tibiae: III p1-1-0, v0-0-2; IV v0-0-2; metatarsi: III p1-1-1, v0-1-2; IV p1-1-1, v0-1-2, r1-1-1.

	I	II	III	IV	Palp
Femur	2.22	2.14	1.79	2.51	0.72
Patella	0.91	0.89	0.68	0.83	0.39
Tibia	1.73	1.78	1.29	1.82	0.51
Metatarsus	1.92	1.88	1.53	2.23	—
Tarsus	0.68	0.68	0.59	0.62	0.77
Total	7.46	7.37	5.88	8.01	2.39

Genitalia with muscle plates associated with anterior portion very strongly developed (fig. 202); as in *T. alipes*, secretory gland single, merging with median plate.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from New South Wales, Australia.

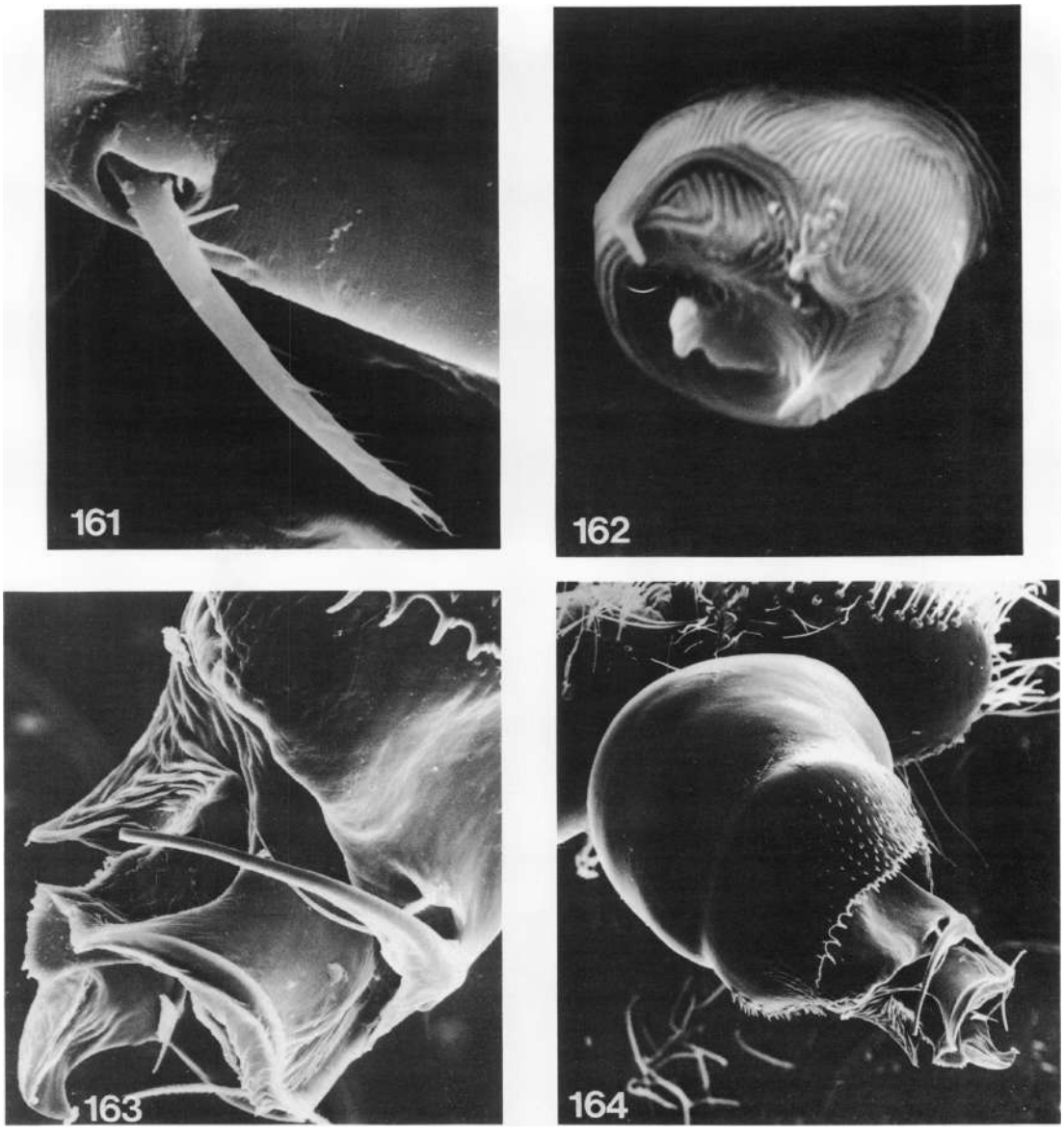
Tasmanoonops buang, new species

Figures 168–172

TYPE: Male holotype taken in a window trap in a *Nothofagus* and *Eucalyptus* forest at an elevation of 1200 m on Mount Donna Buang, Victoria, Australia (January 11–17, 1980; A. Newton and M. Thayer), deposited in QMB.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

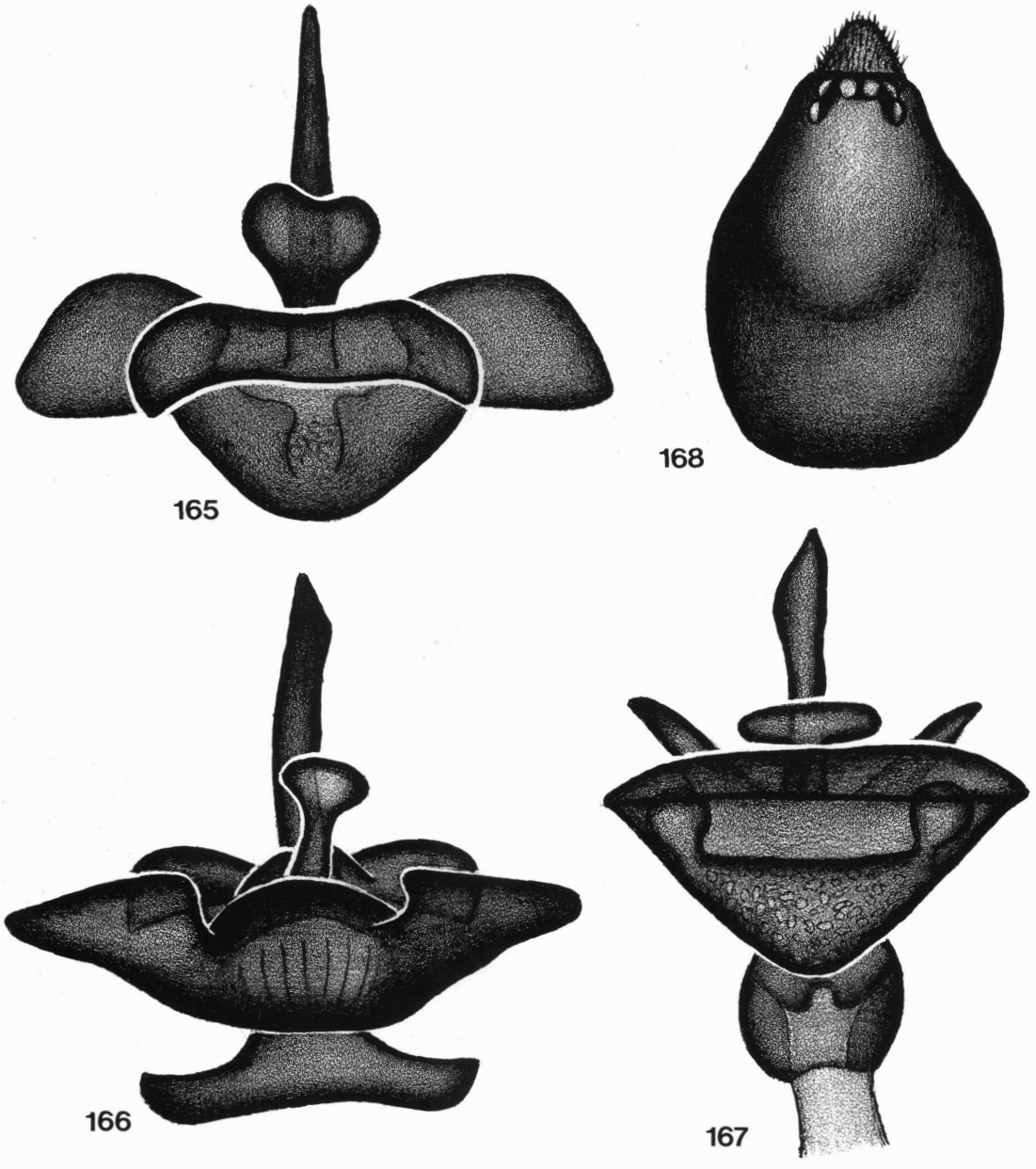
DIAGNOSIS: This species seems most closely related to the Tasmanian *T. magnus*, from which it can be immediately separated by the peculiar projection of the carapace beyond the eyes in the male, as well as by the detailed structure of the male palpal bulb.



FIGS. 161–164. *Tasmanoonops grayi*, new species. 161. Proprioreceptor bristle. 162. Tarsal organ. 163, 164. Male palp.

MALE: Total length 5.00. Carapace 2.42 long, 1.63 wide. Abdomen 2.30 long, 1.84 wide. Eye sizes and grouping typical; anterior margin of carapace extended forward to form broad triangular lobe closely covered with short hairs (fig. 168). Leg spination: tibiae: III p1-1-1, v0-0-2; IV v0-0-2; metatarsi: III d0-0-1, p0-0-1, v0-0-2; IV p0-1-1, v0-0-2. Tarsal organ with three receptor lobes forming curved row; lateral cuticular lobes more numerous than in *T. magnus* (figs. 171, 172) although general form similar. Claws typical.

	I	II	III	IV	Palp
Femur	2.24	2.24	1.04	2.26	0.64
Patella	0.96	0.88	0.73	0.92	0.56
Tibia	1.20	1.20	1.44	1.84	0.40
Metatarsus	2.00	2.08	1.68	2.24	—
Tarsus	0.88	0.88	0.64	0.73	0.48
Total	7.28	7.28	5.53	7.99	2.08

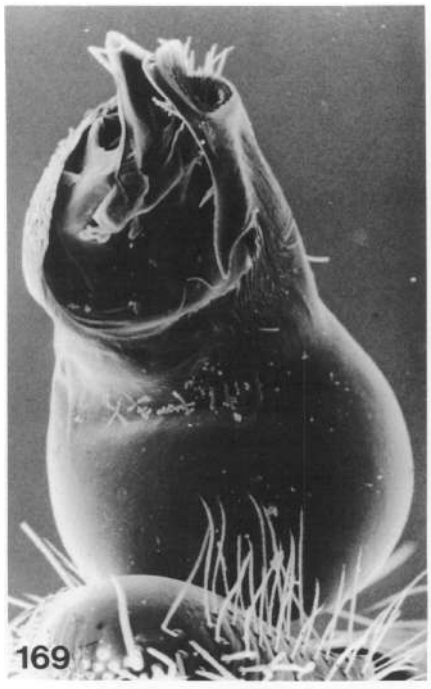


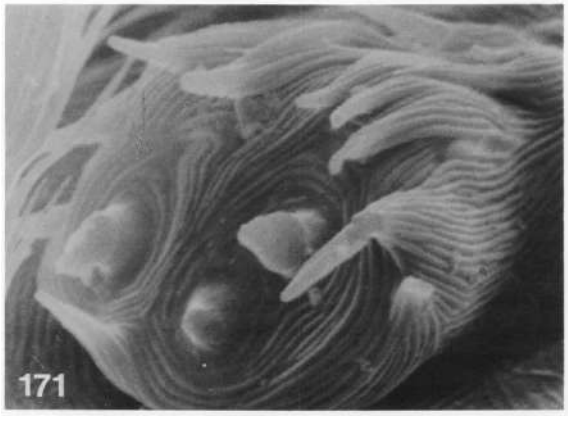
FIGS. 165–168. 165–167. Anterior portion of internal female genitalia of *Tasmanoonops.* 168. Carapace of male. 165. *T. drimus,* new species. 166. *T. pinus,* new species. 167. *T. trispinus,* new species. 168. *T. buang,* new species.

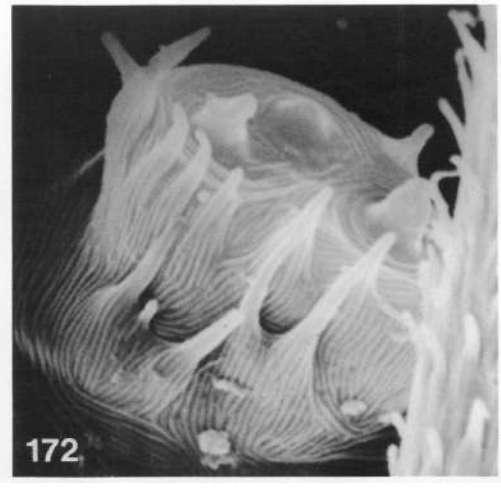
Palpal bulb similar to that of *T. magnus* in shape and general appearance but distal denticulation and processes different; conspicuous straight spinous process characteristic of *T. magnus* and *T. grayi* represented by sinuous spine (figs. 169, 170).

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.







FIGS. 169–172. *Tasmanoonops buang,* new species. 169, 170. Male palp. 171, 172. Tarsal organ from leg I.

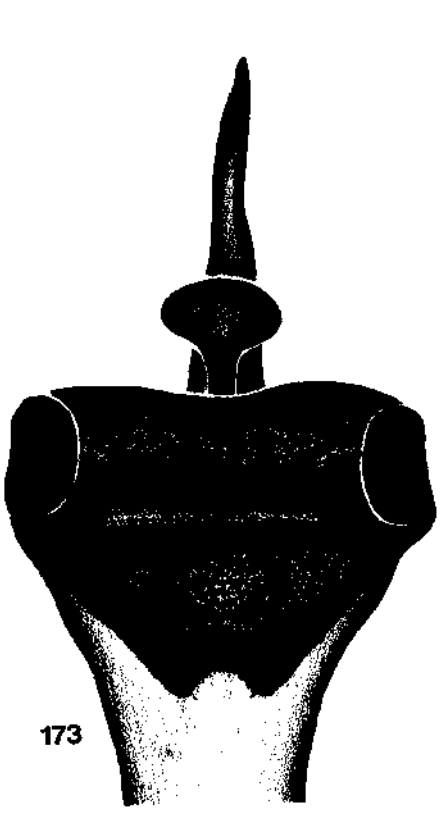
DISTRIBUTION: Known only from Victoria, Australia.

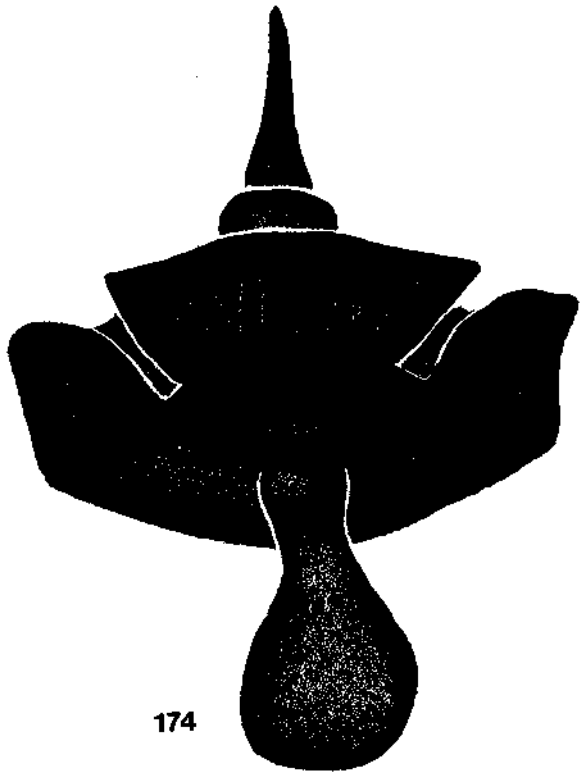
Tasmanoonops dorrigo, new species
Figures 173, 175–177

TYPE: Female holotype taken in or under rotten mushrooms at an elevation of 710 m in the Never Never picnic area of Dorrigo National Park, New South Wales, Australia (February 28, 1980; A. Newton and M. Thayer), deposited in QMB.

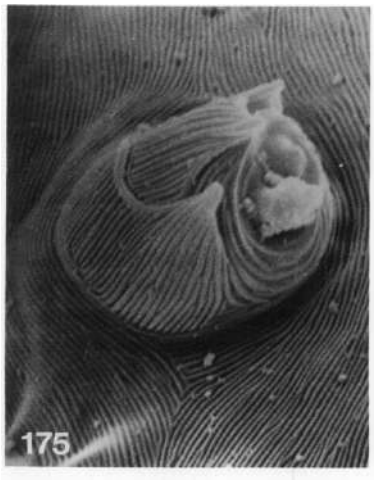
ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

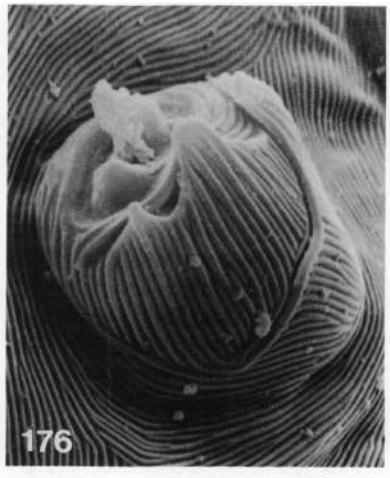
DIAGNOSIS: This species seems most closely related to *T. grayi,* but can be separated by

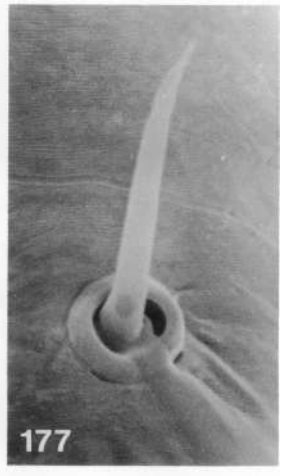




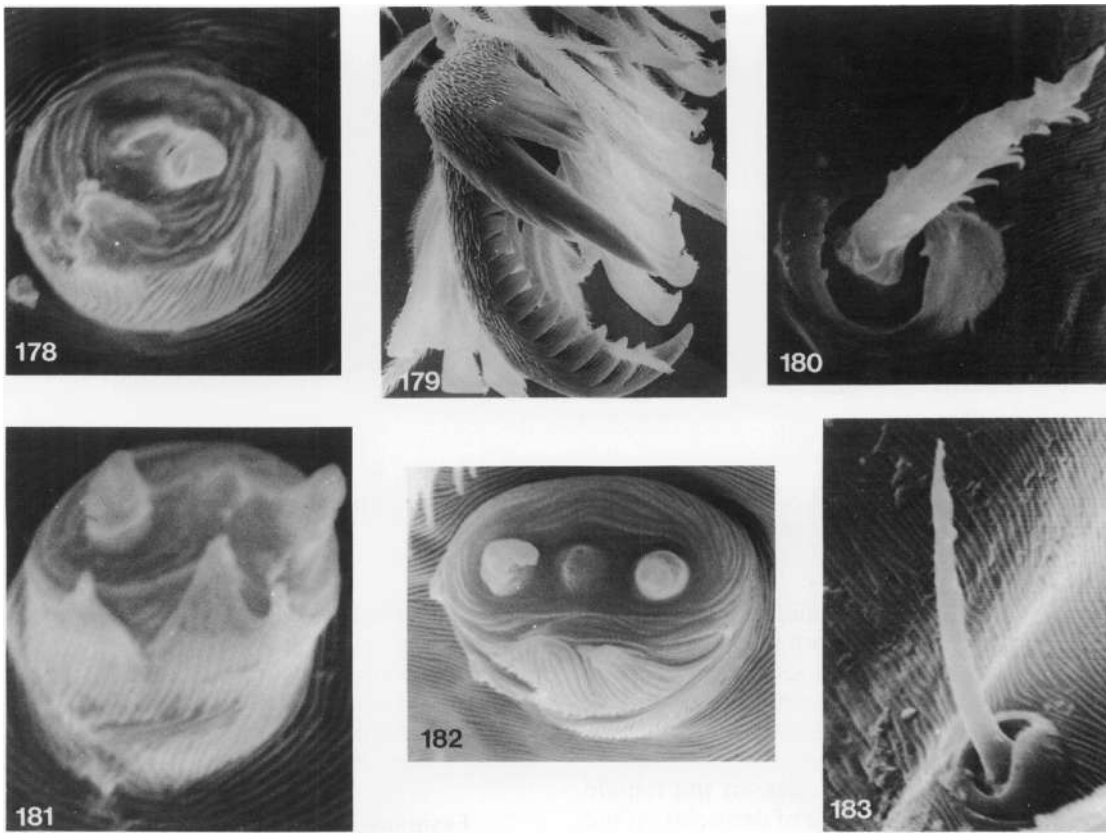
FIGS. 173, 174. Internal female genitalia of *Tasmanoonops*. 173. *T. dorrigo*, new species, anterior portion. 174. *T. buffalo*, new species; note the small posterior receptaculum and the closely spaced secretory lobes.







FIGS. 175–177. *Tasmanoonops dorrigo*, new species. 175, 176, Tarsal organ from leg I. 177. Proprioreceptor bristle.



FIGS. 178–183. 178–180. *Tasmanoonops ripus*, new species. 181–183. *T. otimus*, new species. 178, 181, 182. Tarsal organ from leg I. 179. Claws of leg I. 180, 183. Proprioreceptor bristle.

differences in the tarsal organ and the distinctive form of the female internal genitalia.

MALE: Unknown.

FEMALE: Total length 4.64. Carapace 1.92 long, 1.36 wide. Abdomen 2.56 long, 1.44 wide. Eye sizes and grouping typical. Anterior spinnerets with denticles. Leg spination: tibiae III, IV p1-1-1, v1-1-2, r1-1-1; metatarsi: III p1-1-1, v1-1-2, r1-1-0; IV p1-1-1, v2-3-2, r1-1-2. Tarsal organ (figs. 175, 176) with two receptor nodes; proprioreceptor bristles with few lateral projections (fig. 177). Lateral flanges of claws with 10 or 11 short teeth.

	I	II	III	IV	Palp
Femur	1.61	1.60	1.52	2.00	0.48
Patella	0.82	0.81	0.64	0.83	0.22
Tibia	1.42	1.36	0.96	1.60	0.42
Metatarsus	1.58	1.44	1.20	1.84	—
Tarsus	0.48	0.48	0.40	0.64	0.64
Total	5.91	5.69	4.72	6.91	1.76

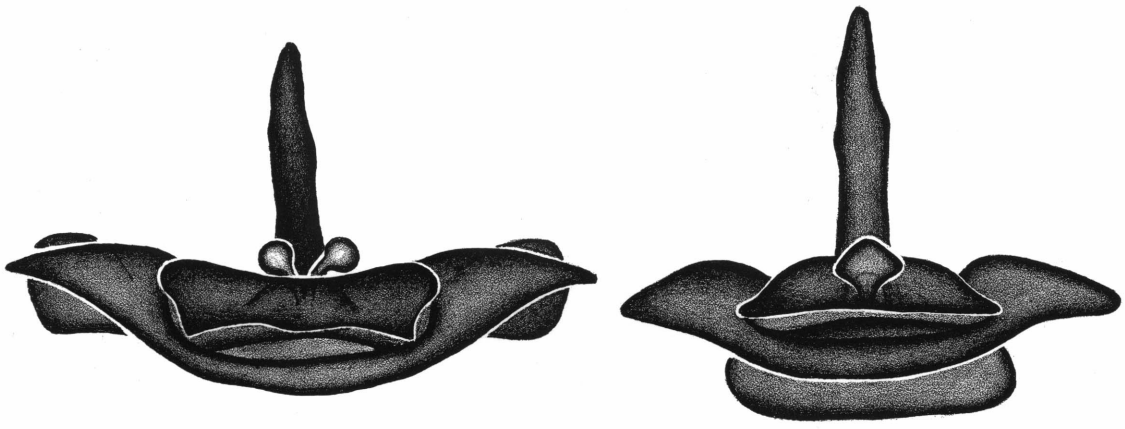
Internal genitalia distinctive (fig. 173), with ovate anterior receptaculum opening through slender duct at base of anterior transverse plate; posterior receptaculum large, with broad anterior portion as in *T. grayi*.

OTHER MATERIAL EXAMINED: One female taken in a pitfall trap at an elevation of 760 m in a subtropical rainforest 2.7 km NW of the type locality (Feb. 28–Mar. 5, 1980; A. Newton and M. Thayer; AMNH).

DISTRIBUTION: Known only from New South Wales, Australia.

Tasmanoonops otimus, new species
Figures 181–183, 185

TYPE: Female holotype taken in a Berlese sample of sphagnum at an elevation of 1800 m at Charlotte Pass, Mount Kosciusko, New South Wales, Australia (April 20, 1978; S. and J. Peck), deposited in QMB.



184 185

FIGS. 184, 185. Anterior portion of internal female genitalia of *Tasmanoonops*. 184. *T. ripus,* new species. 185. *T. otimus,* new species.

ETYMOLOGY: The specific name is an arbitrary combination of letters.

DIAGNOSIS: This species seems most closely related to *T. mainae* but can be separated by the smaller size, the fewer cuticular lobes on the tarsal organ, the single receptaculum at the base of the anterior spine in the female genitalia, and the presence of denticles on the anterior spinnerets.

MALE: Unknown.

FEMALE: Total length 2.46. Carapace 1.16 long, 0.88 wide. Abdomen 1.28 long, 0.88 wide. Eye sizes and grouping typical. Anterior spinnerets with denticles. Leg spination: tibiae: II v1-1-0; III p1-1-1, v0-1-2, r0-1-1; IV p1-1-1, v1-1-2, r1-1-1; metatarsi: II v1-0-2; III p1-1-0, v0-1-2, r1-1-0; IV p1-1-1, v1-0-2, r1-1-1. Tarsal organ with three receptor lobes in straight row and three broad cuticular lobes along posterior margin (figs. 181, 182); proprioreceptor bristles slender, only weakly denticulate with few small lateral projections (fig. 183). Teeth on lateral flanges of claws slender, sharply pointed (in contrast to *T. mainae*).

	I	II	III	IV	Palp
Femur	—	0.82	0.72	0.88	0.36
Patella	—	0.44	0.36	0.40	0.16
Tibia	—	0.64	0.44	0.68	0.20
Metatarsus	—	0.60	0.52	0.76	—
Tarsus	—	0.36	0.32	0.40	0.32
Total	—	2.86	2.36	3.12	1.04

Internal genitalia (fig. 185) with single median receptaculum at base of anterior spine leading into small atrium through short duct.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from New South Wales, Australia.

Tasmanoonops ripus, new species

Figures 178–180, 184, 273

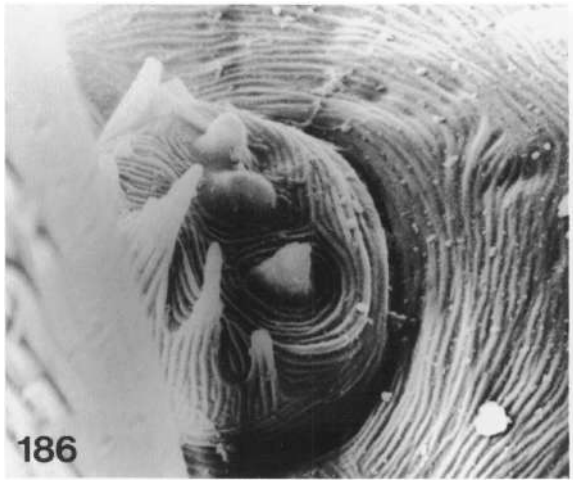
TYPE: Female holotype taken in a pitfall trap in a *Nothofagus moorei* rainforest at an elevation of 1300 m at Wright South Lookout Trail, New England National Park, New South Wales, Australia (February 27–March 6, 1980; A. Newton and M. Thayer), deposited in QMB.

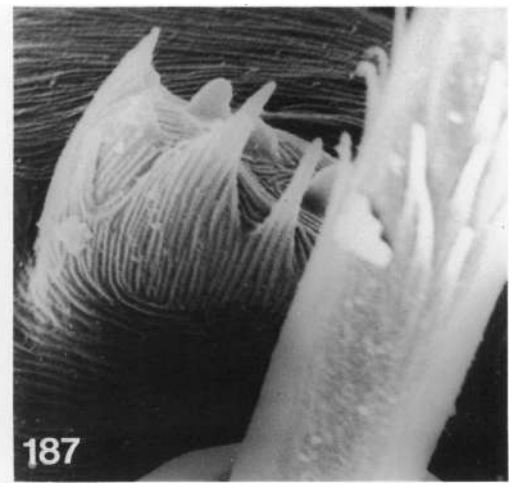
ETYMOLOGY: The specific name is an arbitrary combination of letters.

DIAGNOSIS: This species seems related to *T. grayi,* with which it shares a similar tarsal organ, but can be separated by the more strongly developed leg spination and the different form of the internal genitalia.

MALE: Unknown.

FEMALE: Total length 4.51. Carapace 2.00 long, 1.44 wide. Abdomen 2.48 long, 1.44 wide. Eye sizes and grouping typical. Anterior spinnerets with denticles. Leg spination: tibiae: II v0-1-0; III, IV p1-1-1, v1-1-2, r1-1-1; metatarsi: III p1-1-1, v0-0-1, r1-1-1; IV p1-1-1, v1-1-2, r1-1-1. Tarsal organ (fig. 178) with two receptor lobes merged on midsur-





FIGS. 186, 187. *Tasmanoonops buffalo*, new species, tarsal organ from leg I.

face as in *T. grayi* but cuticular lobes apparently absent; proprioreceptor bristles stronger than in *T. grayi* (fig. 180), lateral denticles thicker. Lateral flanges of claws well developed, with eight or nine sharp teeth (fig. 179).

	I	II	III	IV	Palp
Femur	—	1.68	1.44	2.08	0.48
Patella	—	0.72	0.56	0.81	0.24
Tibia	—	1.44	1.12	1.60	0.41
Metatarsus	—	1.36	1.20	1.62	—
Tarsus	—	0.48	0.46	0.56	0.64
Total	—	5.68	4.78	6.67	1.77

Internal genitalia strikingly different (fig. 184), with muscle attachment plates laterally directed, secretory glands discharging into paired small spherical receptacula rather than forming part of median spine as in *T. grayi* (fig. 273).

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from New South Wales, Australia.

Tasmanoonops buffalo, new species
Figures 174, 186, 187

TYPE: Female holotype taken from *Eucalyptus* litter at an elevation of 1300 m at Eurobin Creek, Bright Mountain, Buffalo National Park, Victoria, Australia (April 24, 1978; S. and J. Peck), deposited in QMB.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

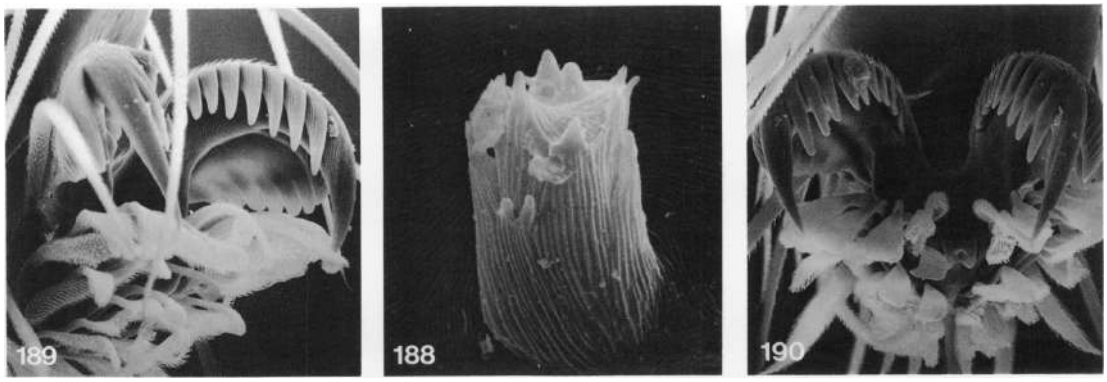
DIAGNOSIS: This species is related to *T. otimus*, from which it can be separated by the more numerous cuticular lobes on the tarsal organ, differences in the female internal genitalia, and the absence of denticles on the anterior spinnerets of females.

MALE: Unknown.

FEMALE: Total length 4.18. Carapace 2.00 long, 1.52 wide. Abdomen 2.16 long, 1.68 wide. Eye sizes and grouping typical. Anterior spinnerets without denticles. Leg spination: tibiae: III p1-1-1, v0-0-2; IV p0-1-0, v0-0-2, r0-0-1; metatarsi: III p0-1-0, v0-0-2; IV p1-1-0, v0-0-2, r1-1-0. Tarsal organ with three receptor lobes in row as in *T. otimus* but with five cuticular lobes along posterior margin rather than three (figs. 186, 187); proprioreceptor bristles slender, with two or three long, lateral projections on distal half. Claws typical.

	I	II	III	IV	Palp
Femur	1.84	1.84	1.52	2.00	0.56
Patella	0.72	0.64	0.56	0.80	0.40
Tibia	1.52	1.44	0.96	1.52	0.32
Metatarsus	1.60	1.52	1.28	1.84	—
Tarsus	0.72	0.64	0.48	0.56	0.64
Total	6.40	6.08	4.80	6.72	1.92

Internal genitalia (fig. 174) similar to that of *T. otimus* but anterior receptaculum larger, with longer duct, anterior plate wide; posterior receptaculum very small, secretory lobes closely spaced (in contrast to typical organ found in *T. otimus*), reduced size may be artifactual.



FIGS. 188–190. *Tasmanoonops parvus*, new species. 188. Tarsal organ. 189, 190. Claws of leg I.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Victoria, Australia.

Tasmanoonops parvus, new species
Figures 188–190, 213

TYPE: Female holotype from rainforest litter in Lamington National Park, southeastern Queensland, Australia (March 28, 1976; R. J. Raven and V. E. Davies), deposited in QMB.

ETYMOLOGY: The specific name refers to the small size.

DIAGNOSIS: The distinctive form of the tarsal organ and of the female genitalia are diagnostic.

MALE: Unknown.

FEMALE: Total length 4.82. Carapace 1.95 long, 1.35 wide. Abdomen 2.80 long, 1.72 wide. Eyes subequal; PLE separated by 2.4 times their diameter. Anterior spinnerets with denticles on basal segment. Leg spination: tibiae: III p1-1-1, v0-0-2, r0-1-0; IV p1-1-0, v1-1-2, r1-1-0; metatarsi: III p1-1-1, v0-1-2; IV p1-2-2, v1-0-2, r1-1-1. Tarsal organ relatively high (fig. 188), with lateral cuticular lobes only weakly developed; two well-developed receptor lobes with third smaller lobe. Claws as in figures 189, 190.

	I	II	III	IV	Palp
Femur	1.31	1.39	1.22	1.62	0.21
Patella	0.59	0.68	0.51	0.62	0.21
Tibia	1.05	1.09	0.89	1.42	0.51
Metatarsus	1.15	1.15	1.02	1.55	—
Tarsus	0.49	0.49	0.35	0.49	0.55
Total	4.59	4.80	3.99	5.70	1.48

No scute or sclerotic thickening over genitalia; internal genitalia distinctive, with only limited development of lateral plates (fig. 213); median rod slender, acuminate, with spherical receptaculum leading into base but rod hollow, atrium extending through to tip of structure.

OTHER MATERIAL EXAMINED: Three females taken with the holotype (QMB).

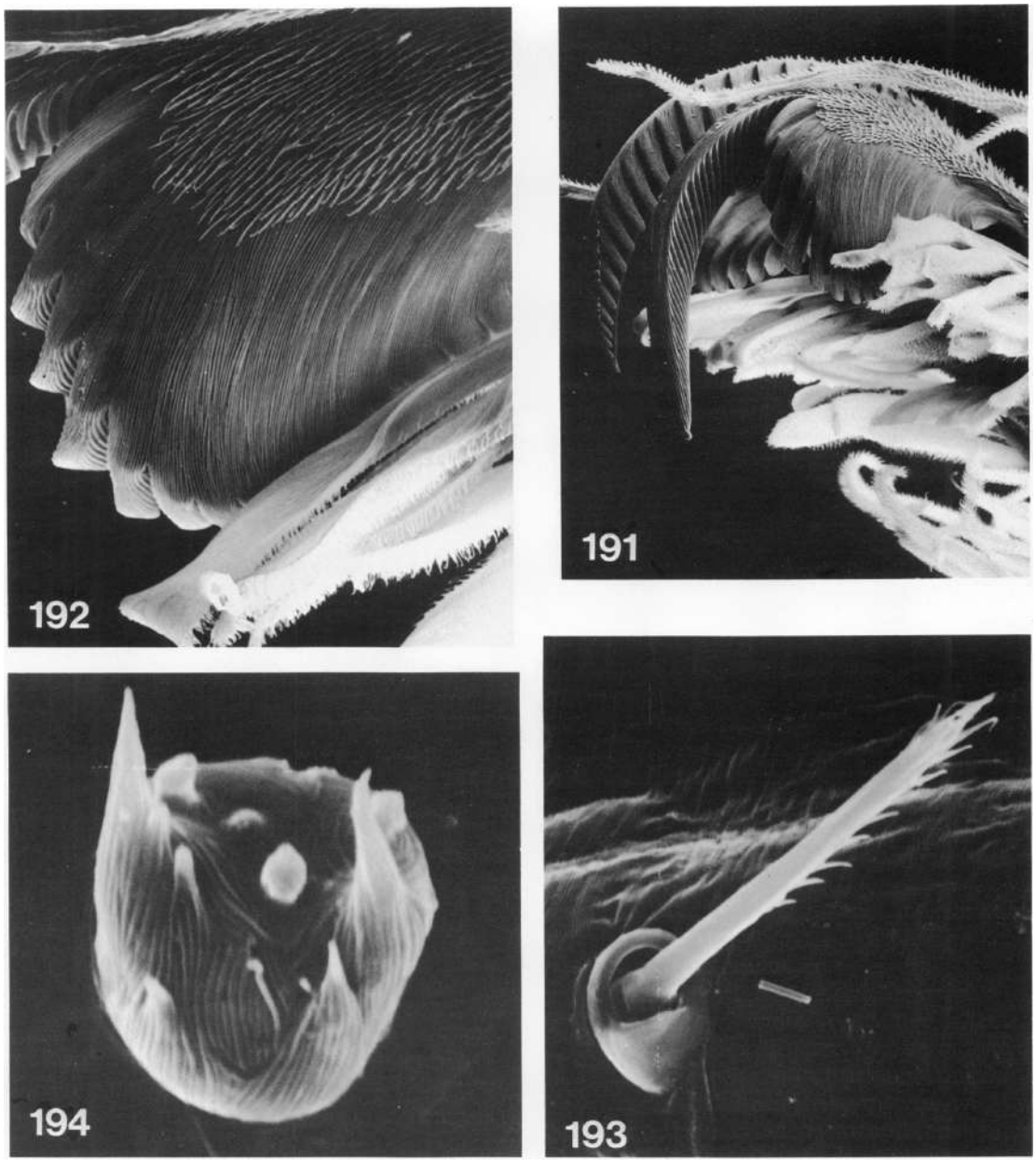
DISTRIBUTION: Known only from southeastern Queensland, Australia. This species was collected with *T. complexus* and provides one of the few examples of sympatric distribution within *Tasmanoonops*. The species is much smaller than *T. complexus* and is not closely related. The internal female genitalia are entirely different, so we expect no difficulty in associating males of this species with the females when they are collected.

Tasmanoonops mainae, new species
Figures 191–194, 200

TYPE: Female holotype from Torbay Head, Western Australia (January 30–31, 1978; B. Y. Main), deposited in WAM.

ETYMOLOGY: The specific name is a patronym in honor of Dr. Barbara York Main, of the University of Western Australia, who discovered the species.

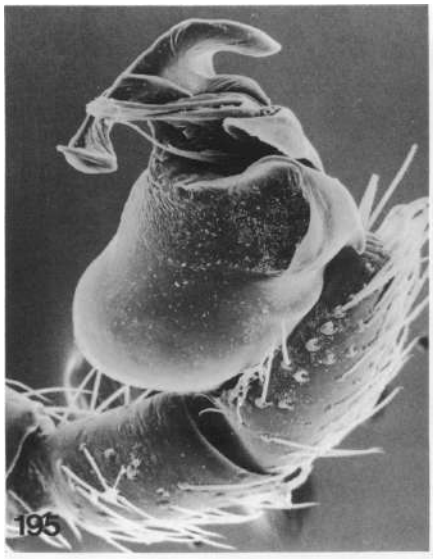
DIAGNOSIS: This species is related to *T. otimus* and *T. grayi* but can be distinguished from the former by the characters listed above and from the latter by the smaller size, the absence of denticles on the spinnerets, and differences in the female genitalia.

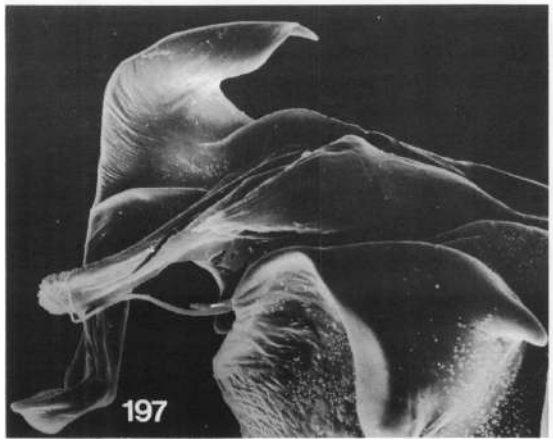


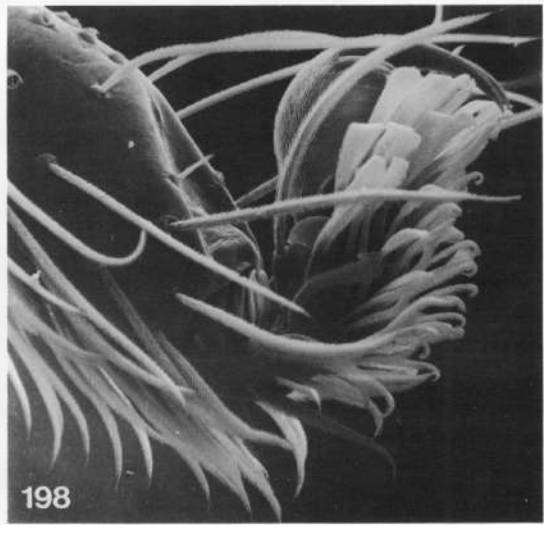
FIGS. 191–194. *Tasmanoonops mainae*, new species. 191, 192. Claws of leg I. 193. Proprioreceptor bristle. 194. Tarsal organ.

MALE: Unknown.

FEMALE: Total length 4.41. Carapace 2.13 long, 1.61 wide. Abdomen 2.32 long, 1.24 wide. Eye length ratio, ALE:PME:PLE, 8:9:8; PLE separated by 2.5 times their width. Spinnerets without denticles. Leg spination: tibiae: III p1-1-1, r0-0-1; IV p0-1-1, v1-1-2, r1-1-1; metatarsi: III p1-1-1, v1-1-2, r1-1-1; IV p0-1-1, v1-1-2, r1-1-1. Tarsal organ relatively squat, lateral cuticular processes pointed; four receptor lobes small, widely separated (fig. 194); proprioreceptor bristles







FIGS. 195–198. 195–197. *Australobus torbay,* new species, male palp. 198. *Tasmanoonops grayi,* new species, claws and claw tuft.

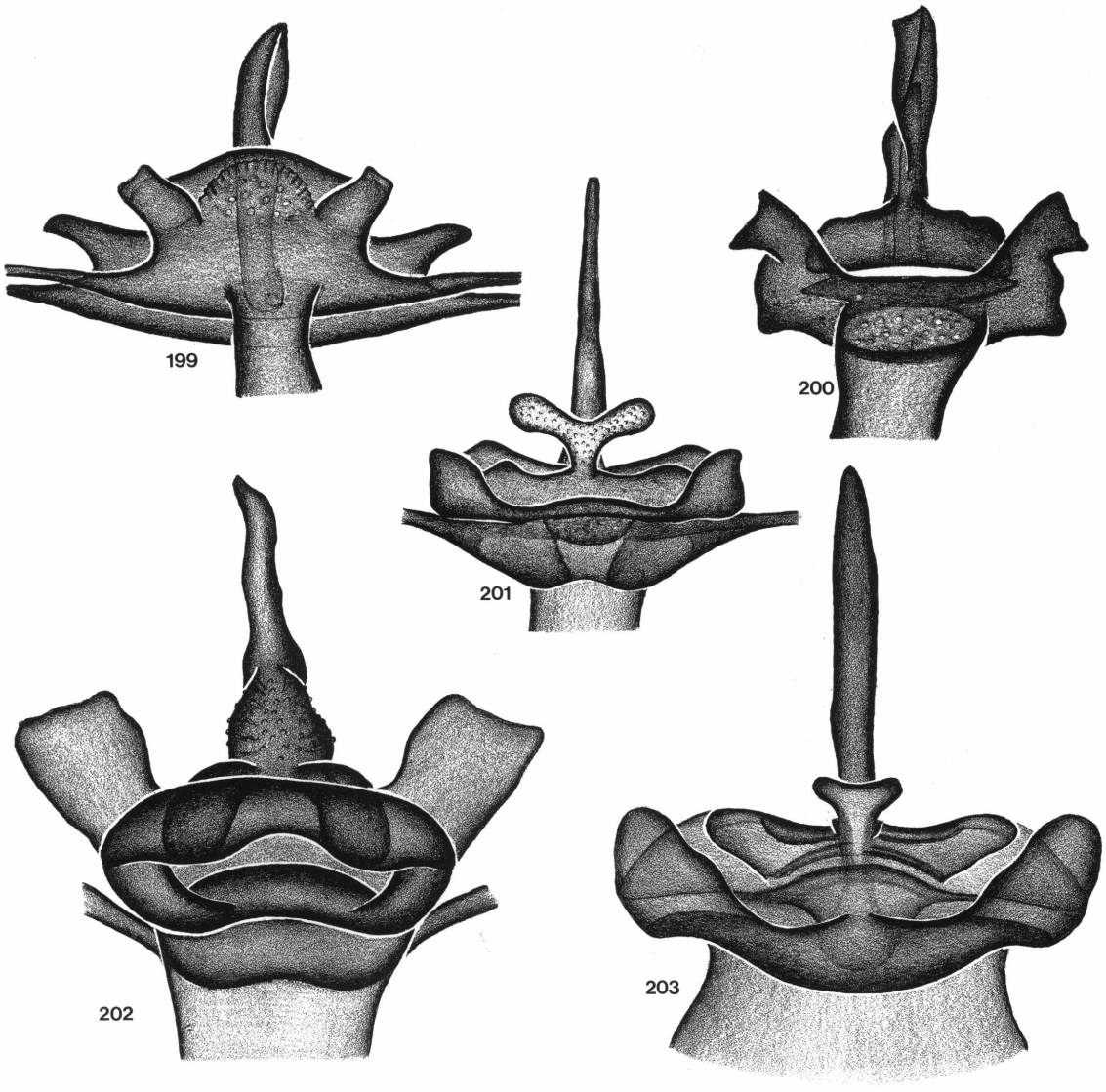
with lateral denticles (fig. 193). Lateral flange of claws very well developed; marginal teeth short, blunt (figs. 191, 192).

	I	II	III	IV	Palp
Femur	1.81	1.81	1.41	2.22	0.62
Patella	0.89	0.82	0.63	0.73	0.31
Tibia	1.58	1.59	1.03	1.72	0.50
Metatarsus	1.72	1.59	1.21	2.11	—
Tarsus	0.72	0.62	0.50	0.70	0.72
Total	6.72	6.43	4.78	7.48	2.15

Genitalia (fig. 200) with no separate anterior receptacula but with small secretory gland at base of median rod; posterior receptaculum large, with narrow neck leading into bursa.

OTHER MATERIAL EXAMINED: Numerous immature females taken in litter above high tide level on Cape Howe, Western Australia (January 29, 1979; B. Y. Main; WAM).

DISTRIBUTION: Known only from seashore above high tide level in Western Australia. If this habitat is typical for the species it represents (along with the "intertidal zone" record of *Chileolobus eden* noted above) the first seashore record for the family. Extensive collecting in New Zealand has revealed no similar occurrences, although there are many spiders of other families living in (and restricted to) seashore zones.



FIGS. 199–203. Anterior portion of internal female genitalia of *Tasmanoonops*. 199. *T. alipes* Hickman. 200. *T. mainae,* new species. 201. *T. pallidus,* new species. 202. *T. grayi,* new species. 203. *T. hickmani,* new species.

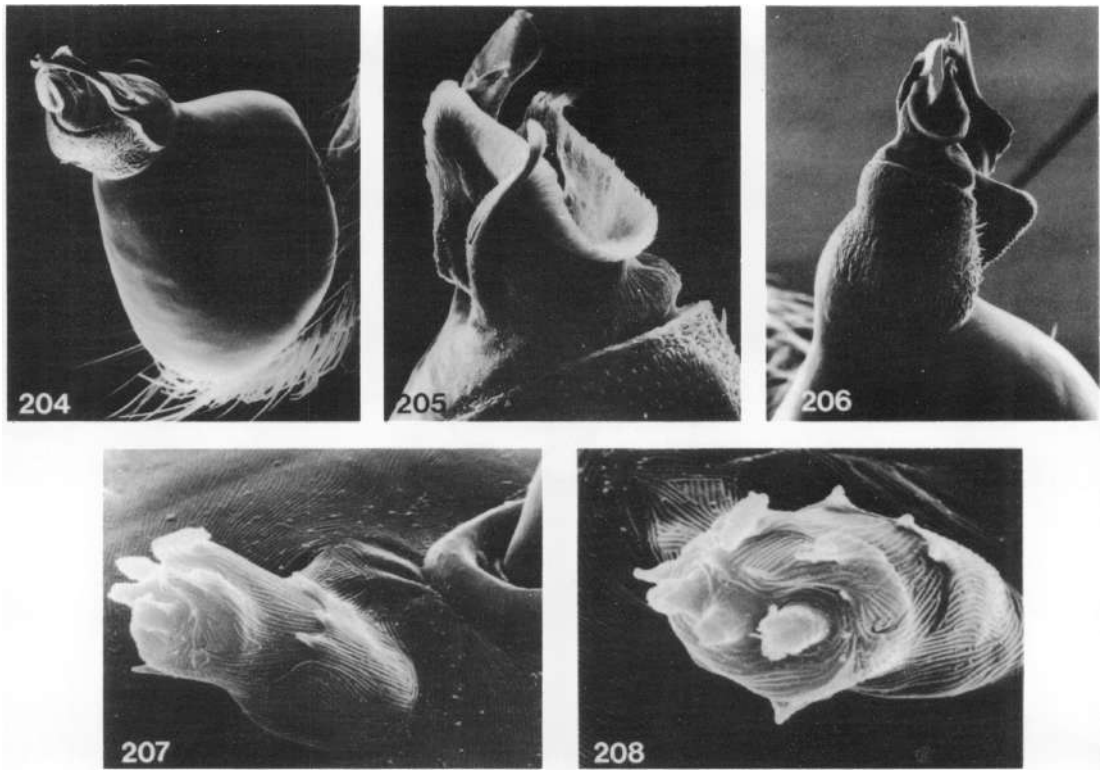
Tasmanoonops hickmani, new species
Figures 203–208

TYPES: Male holotype and female paratype from litter at rainforest survey site 15 on Mount Williams, near Eungella, mideastern Queensland, Australia (April 1975; M. R. Gray), deposited in AMS.

ETYMOLOGY: The specific name is a patronym in honor of Dr. V. V. Hickman of Hobart, Tasmania, who first recorded orsolobids from Australasia.

DIAGNOSIS: This species is closely related to *T. parvus* (of which the male is unknown). The females may be separated by differences in the internal genitalia. The elongate tarsal organ separates the species from both *T. grayi* and *T. alipes.*

MALE: Total length 4.62. Carapace 1.97 long, 1.56 wide. Abdomen 2.65 long, 1.40



FIGS. 204–208. *Tasmanoonops hickmani*, new species. 204–206. Male palp. 207, 208. Tarsal organ.

wide. ALE slightly larger than subequal PME and PLE; PLE separated by more than three times their width. Leg spination: tibiae: III p1-1-1, r0-1-0; IV p1-1-2, v1-2-2, r1-1-2; metatarsi: III p1-1-2, v0-0-2, r1-1-2; IV p1-1-2, r1-1-2. Tarsal organ relatively high, slightly more than twice as high as wide, with three small receptor lobes arranged in transverse row; six lateral cuticular lobes (three midlateral, three distal, figs. 207, 208). Claws typical.

	I	II	III	IV	Palp
Femur	2.23	2.14	1.95	2.39	0.42
Patella	0.86	0.90	0.79	0.92	0.35
Tibia	1.95	1.91	1.84	2.00	0.39
Metatarsus	1.95	1.82	1.56	2.32	—
Tarsus	0.58	0.58	0.46	0.57	0.67
Total	7.57	7.35	6.60	8.20	1.83

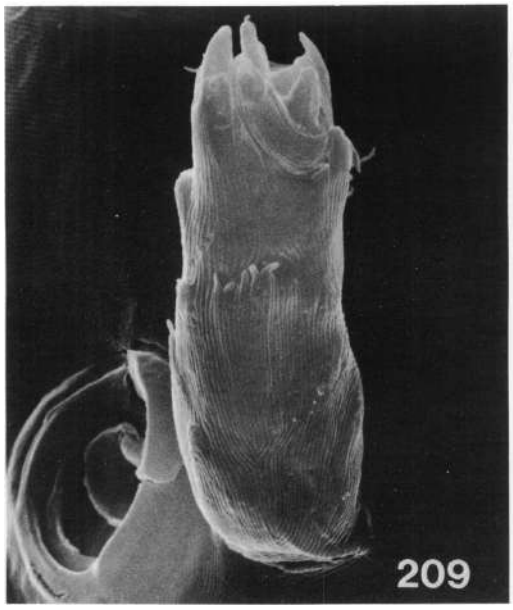
Palpal bulb pyriform, with distal portion constricted, much narrower than in *T. grayi*, densely covered with very small denticles (figs. 204–206); embolus appears as flattened plate.

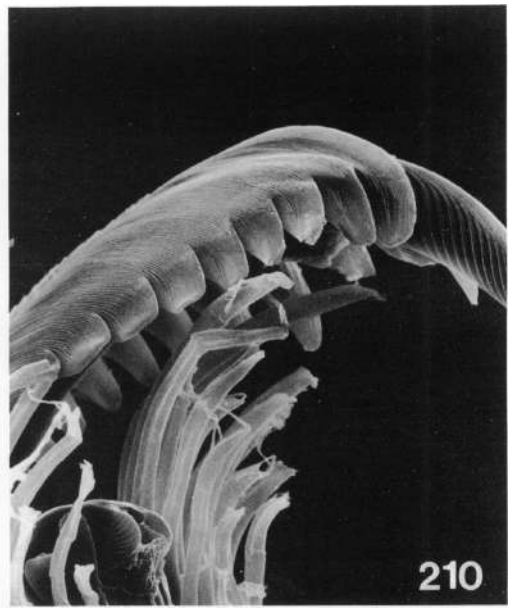
FEMALE: As in male, except for the following. Total length 5.13. Carapace 2.41 long, 1.79 wide. Abdomen 2.79 long, 1.53 wide. Anterior spinnerets with denticles. Leg spination as in male except tibia IV p1-1-1, r1-1-1.

	I	II	III	IV	Palp
Femur	—	2.22	2.15	2.53	0.76
Patella	—	1.00	0.91	1.04	0.38
Tibia	—	—	1.38	2.04	0.52
Metatarsus	—	—	1.74	2.51	—
Tarsus	—	—	0.57	0.71	0.89
Total	—	—	6.75	8.83	2.55

Epigynal region not sclerotized; anterior portion of internal genitalia (fig. 203) with receptacula fused so that structure appears bilobed distally but has single duct leading back to bursa; posterior receptaculum large, opening into bursa through broad slit.

OTHER MATERIAL EXAMINED: Other males taken with the types (AMS).





FIGS. 209, 210. *Tasmanoonops pallidus,* new species. 209. Tarsal organ. 210. Claws.

DISTRIBUTION: Known only from mideastern Queensland, Australia.

Tasmanoonops pallidus, new species
Figures 201, 209, 210

TYPE: Female holotype from Figtree Cave, Wombeyan, New South Wales, Australia (June 21, 1963; A. M. Richards), deposited in AMS.

ETYMOLOGY: The specific name refers to the lack of pigment.

DIAGNOSIS: This species is closely related to *T. hunti,* from which it can be distinguished by the different spination and relative leg lengths and by differences in the form of the tarsal organ.

MALE: Unknown.

FEMALE: Total length 5.54. Carapace 2.33 long, 1.58 wide. Abdomen 3.21 long, 1.74 wide. Eyes equal in width; PLE separated by almost three times their width. Anterior spinnerets without denticles. Leg spination: tibiae: III v1-1-1; IV p1-0-1, v1-1-2; metatarsus IV p1-0-1, v1-1-2, r0-0-1. Tarsal organ elongate, stouter than in *T. hunti,* with four or five very small cuticular lobes on midsurface and four stronger lobes distally (fig. 209). Teeth on claws short, blunt (fig. 210).

	I	II	III	IV	Palp
Femur	2.25	2.22	1.95	2.45	1.61
Patella	0.91	1.03	0.87	1.01	0.35
Tibia	2.04	1.91	1.53	2.21	0.42
Metatarsus	2.15	2.05	1.75	2.53	—
Tarsus	0.65	0.69	0.61	0.75	0.78
Total	8.00	7.90	6.71	8.95	3.16

Anterior receptaculum strongly bilobed, with secretory pores scattered over whole surface (fig. 201).

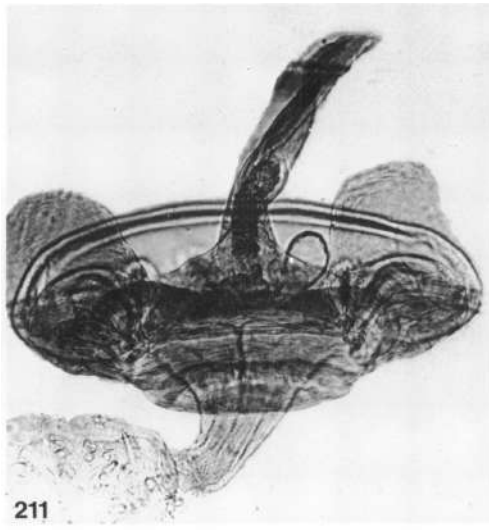
OTHER MATERIAL EXAMINED: None.

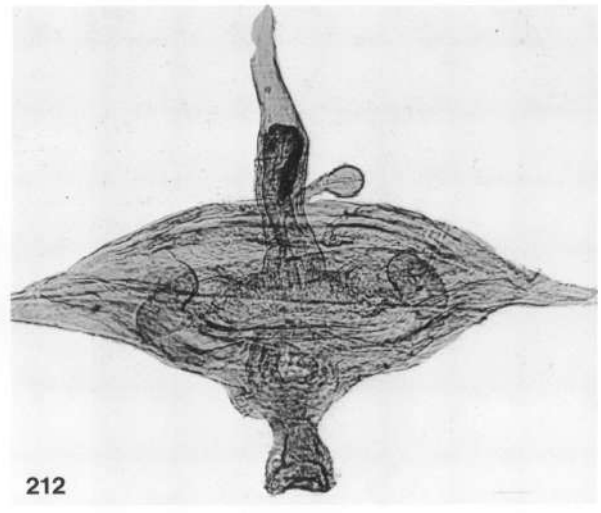
DISTRIBUTION: Known only from a cave in New South Wales, Australia; the pale coloration and long, slender legs seem to be adaptations to cave life and the species may be troglobitic.

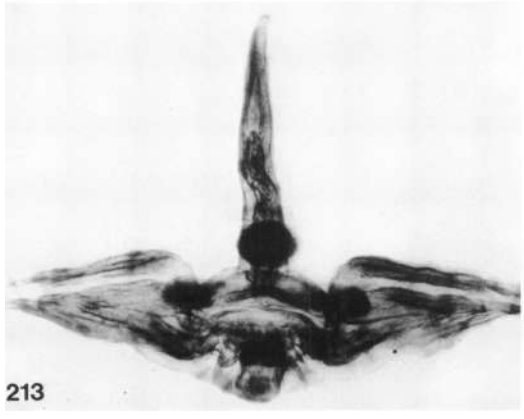
Tasmanoonops elongatus, new species
Figures 212, 216, 219–223, 277, 832, 845

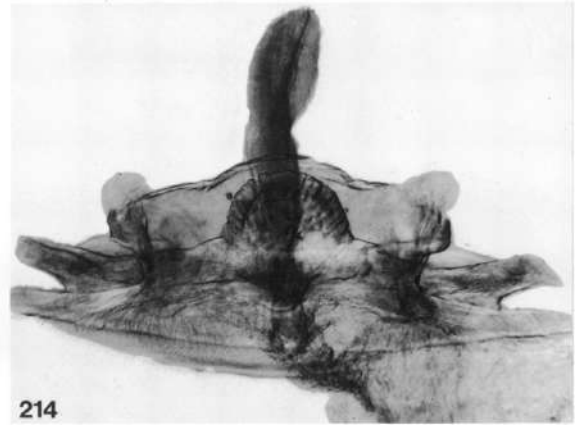
TYPES: Male holotype and female paratype taken at an elevation of 1300 m at rainforest site 56 in New England National Park, northern New South Wales, Australia (April–May 1976; M. R. Gray and C. Horseman), deposited in AMS.

ETYMOLOGY: The specific name refers to the shape of the male palpal bulb.









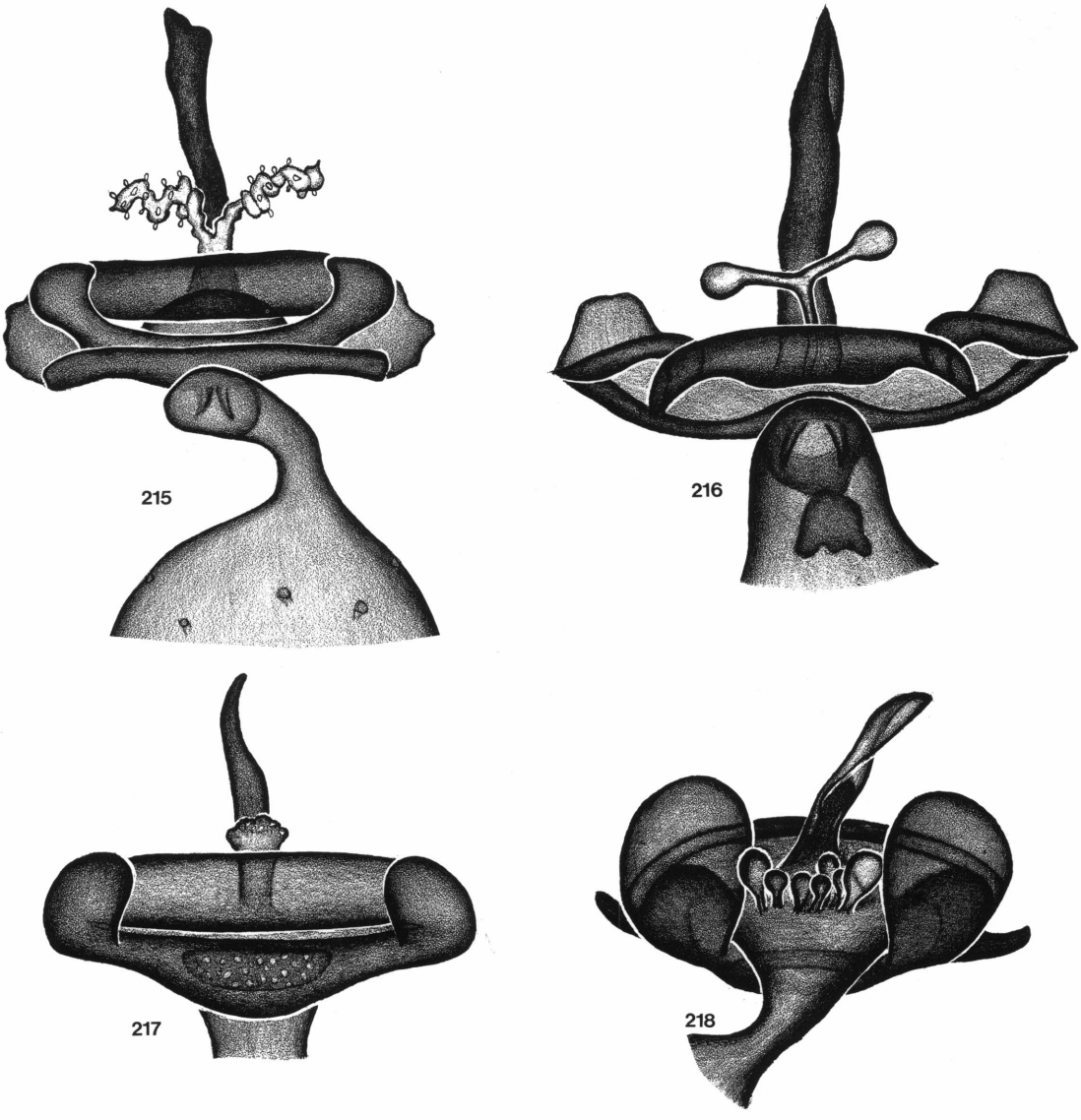
FIGS. 211–214. Anterior portion of internal female genitalia of *Tasmanoonops*. 211. *T. mysticus*, new species. 212. *T. elongatus*, new species. 213. *T. parvus*, new species. 214. *T. alipes* Hickman.

DIAGNOSIS: The elongate bulb of the male palp and the limited modification of the distal portion of the bulb separate males of this species from all others known; the form of the anterior receptacula is diagnostic for females.

MALE: Total length 4.48. Carapace 1.85 long, 1.52 wide. Abdomen 2.51 long, 1.33 wide. Eye length ratio, ALE:PME:PLE, 7:9:7; PLE separated by almost three times their diameter. Leg spination: tibiae: III p1-1-0, v0-1-2, r0-1-1; IV d0-1-0, p0-0-1, v0-0-1, r1-1-1; metatarsi: III p1-1-2, v0-1-1, r1-0-1; IV d0-1-0, p1-0-2, v0-0-2, r1-1-1. Tarsal organ low, with short distal cuticular lobes and three small receptor lobes (fig. 222); proprioreceptor bristles with lateral spines, strongly branched distally (fig. 223). Claws typical.

	I	II	III	IV	Palp
Femur	2.48	2.46	2.05	2.51	0.66
Patella	0.95	0.95	0.72	0.83	0.55
Tibia	2.23	2.38	1.54	1.83	0.52
Metatarsus	2.23	2.25	1.82	2.51	—
Tarsus	0.82	0.80	0.61	0.72	0.45
Total	8.71	8.84	6.74	8.40	2.18

Bulb distinctive, constricted basally, tapering only slightly at tip, length more than 2.5 times width; embolus not distinguishable, duct



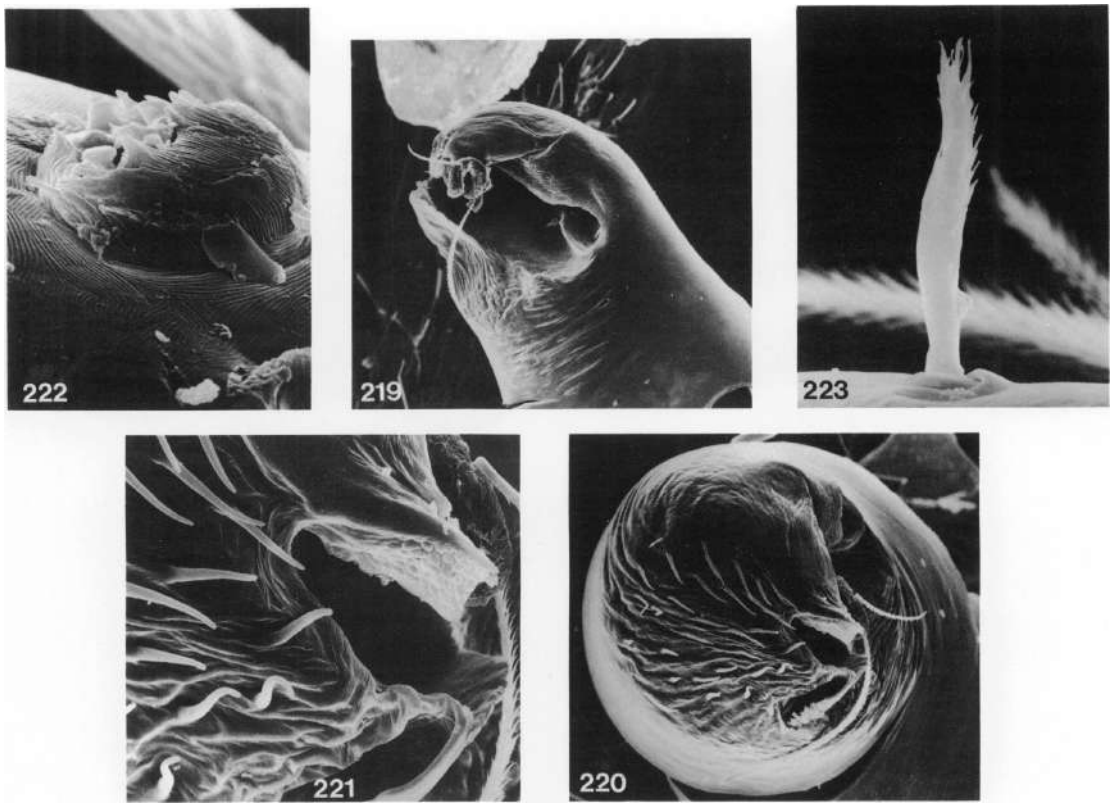
FIGS. 215–218. Anterior portion of internal female genitalia of *Tasmanoonops*. 215. *T. daviesae*, new species. 216. *T. elongatus*, new species. 217. *T. unicus*, new species. 218. *T. mysticus*, new species.

probably opening in distal cavity (figs. 219–221); cavity rugose on inner surface, overhung by flap extending from ventral surface, clothed with numerous spines.

FEMALE: As in male, except for the following. Total length 5.26. Carapace 1.95 long, 1.64 wide. Abdomen 3.25 long, 1.95 wide. Anterior spinnerets with denticles.

	I	II	III	IV	Palp
Femur	2.19	2.25	1.74	2.52	0.65
Patella	0.85	0.93	0.64	0.95	0.32
Tibia	1.71	1.63	1.33	1.91	0.35
Metatarsus	1.79	1.86	1.62	2.21	—
Tarsus	0.65	0.74	0.62	0.64	0.64
Total	7.19	7.41	5.95	8.23	1.96

Anterior receptacula forming slender



FIGS. 219–223. *Tasmanoonops elongatus,* new species. 219–221. Male palp. 222. Tarsal organ. 223. Proprioreceptor bristle.

T-shaped structure with longitudinal and transverse ducts both narrow (figs. 212, 216); two distal receptacula small; median rod strongly developed.

OTHER MATERIAL EXAMINED: One immature female, possibly belonging to this species, taken in logs in a subtropical rainforest at Carrai, 50 miles northwest of Kempsey, New South Wales, Australia (October 3, 1972; M. R. Gray, G. Gray; AMS).

DISTRIBUTION: Known only from New South Wales, Australia.

Tasmanoonops australis, new species

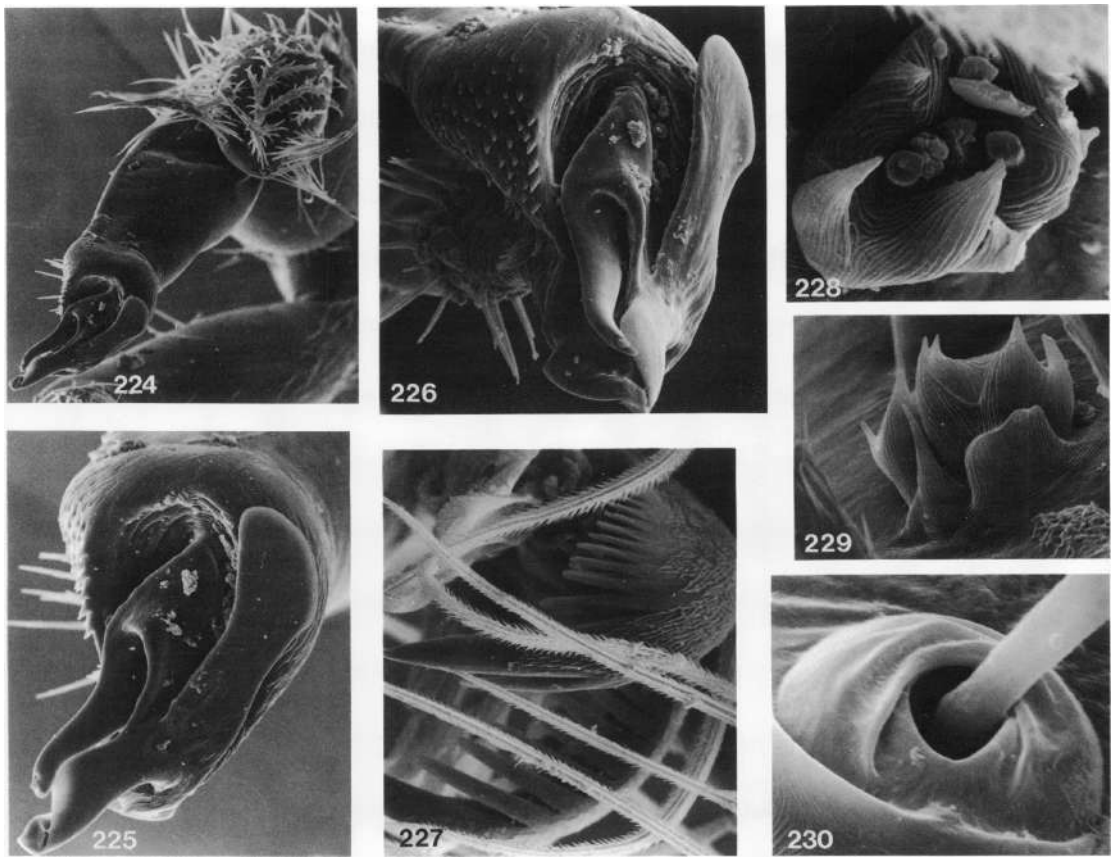
Figures 224–230, 232

TYPE: Female holotype from Pemberton, Western Australia (1972; S. Curry), deposited in WAM.

ETYMOLOGY: The specific name refers to the southern distribution.

DIAGNOSIS: The elongate palpal bulb separates this species from all others except *T. elongatus.* It can be distinguished from that species by the different form of the palpal processes and by the absence of anterior receptacula in the female genitalia.

FEMALE: Total length 4.99. Carapace 2.07 long, 1.71 wide. Abdomen 2.88 long, 1.80 wide. Eye sizes and grouping typical. Anterior spinnerets without denticles. Leg spination: tibiae: III p1-1-1, r1-1-1; IV p1-1-2, r1-1-1; metatarsi III, IV p1-1-1, v2-2-2, r1-1-1. Tarsal organ low, with series of prominent lobes along posterior margin (figs. 228, 229); three low receptor lobes, widely separated, encircled with low ridges. Teeth on lateral flange of claws relatively long (fig. 227).



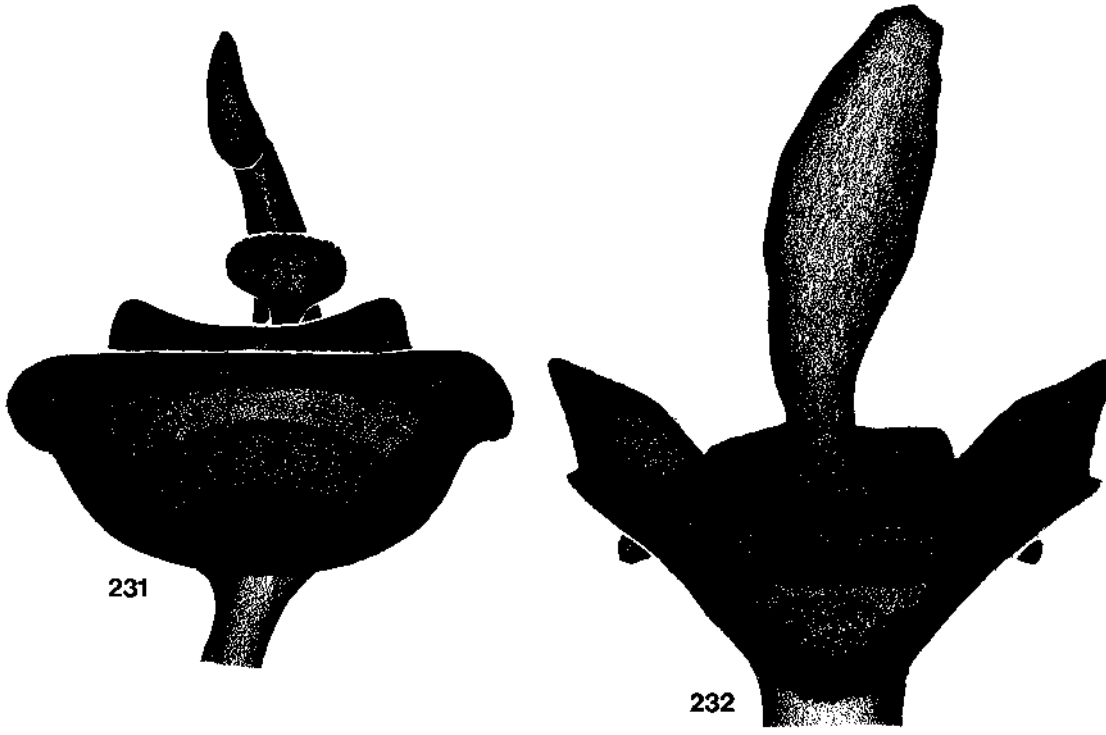
FIGS. 224–230. *Tasmanoonops australis*, new species. 224–226. Male palp. 227. Claws of leg I. 228, 229. Dorsal and posterior views of tarsal organ. 230. Trichobothrium.

	I	II	III	IV	Palp
Femur	2.07	2.06	1.80	2.61	0.72
Patella	0.81	0.81	0.63	0.72	0.27
Tibia	1.89	1.89	1.17	1.89	0.45
Metatarsus	2.07	1.80	1.44	2.16	—
Tarsus	0.81	0.81	0.54	0.72	1.35
Total	7.65	7.37	5.58	8.10	2.79

Plates associated with internal genitalia similar to those of *T. elongatus* but more compact, median rod flattened, much wider (fig. 232); conspicuous paired receptacula present in *T. elongatus* apparently absent; median rod does not appear to have central cavity.

MALE: There are two poorly preserved male specimens in the vial containing the holotype which have been dried and are not suitable for full description. However, there is a well preserved palp which has been illustrated (figs. 224–226). The tibia is strongly swollen and the cymbium is extremely short and distally obtuse. The hairs on the cymbium are strongly ciliate but this may be an artifact of preservation. The bulb is elongate, more than twice as long as wide, and the distal portion bearing the embolus and accessory processes is distended. There is a denticulate region on the prolateral surface and below this several conspicuous slender spines occur (fig. 226). The embolus is a short tube which narrows distally but is not strongly spinous and is associated with a series of plates.

OTHER MATERIAL EXAMINED: Two fragmentary male specimens taken with the holotype (WAM).



FIGS. 231, 232. Anterior portion of internal female genitalia of *Tasmanoonops*. 231. *T. septentrionalis*, new species. 232. *T. australis*, new species.

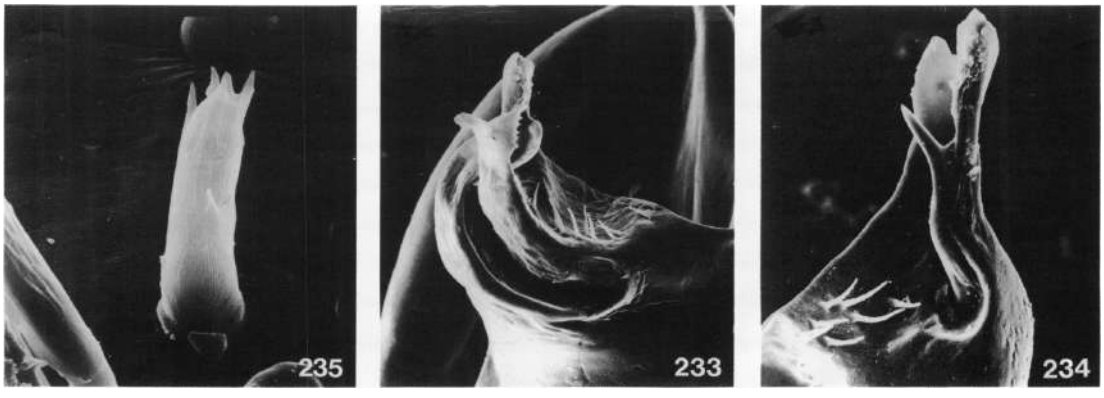
DISTRIBUTION: Known only from Western Australia.

Tasmanoonops hunti, new species
Figures 233–235

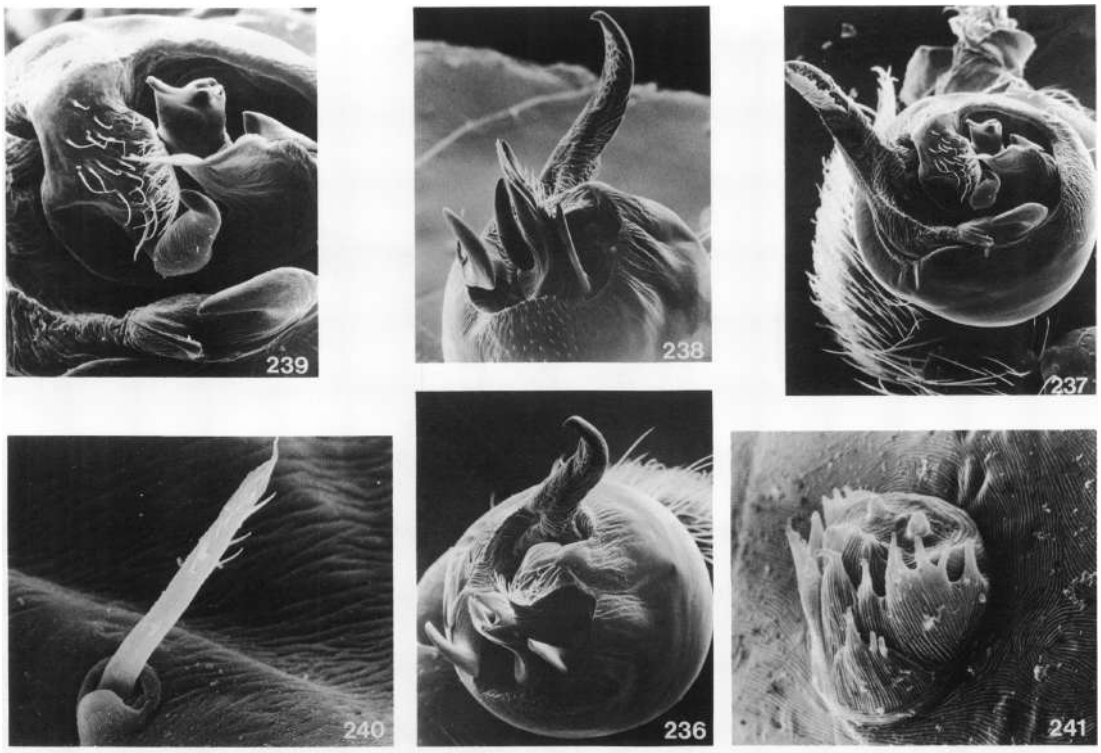
TYPE: Male holotype taken under a log on Mount Edwards, Boyd Plateau, New South Wales, Australia (May 26, 1971; G. Hunt), deposited in AMS.

ETYMOLOGY: The specific name is a patronym in honor of the collector, Dr. G. Hunt of the Australian Museum.

DIAGNOSIS: This species is closely related to *T. pallidus*, with which it could even be



FIGS. 233–235. *Tasmanoonops hunti*, new species. 233, 234. Male palp. 235. Tarsal organ.



FIGS. 236–241. *Tasmanoonops complexus*, new species. 236–239. Male palp. 240. Proprioreceptor bristle. 241. Tarsal organ.

conspecific (although that species is probably troglobitic). In the absence of comparable sexes, the differences in leg lengths, spination, and the cuticular processes of the tarsal organ support specific separation.

MALE: Total length 4.32. Carapace 1.93 long, 1.45 wide. Abdomen 2.41 long, 1.32 wide. Eyes equal in size; PLE separated by 2.5 times their diameter. Leg spination: tibiae: III p0-0-1, r1-0-1; IV p0-0-1, v0-0-2, r1-0-1; metatarsi: III p1-1-1, v1-1-2, r0-0-1; IV p1-0-1, v0-1-2, r1-1-1. Tarsal organ long, slender, 2.5 times as long as wide; single cuticular spine on midlateral surface, four surrounding receptor region (fig. 235); two receptor lobes present. Claws typical.

	I	II	III	IV	Palp
Femur	1.81	1.73	1.48	2.33	0.75
Patella	0.82	0.82	0.65	0.86	0.41
Tibia	1.74	1.64	1.26	1.92	0.43
Metatarsus	1.72	1.65	1.36	2.05	—
Tarsus	0.62	0.54	0.45	0.56	0.56
Total	6.71	6.38	5.20	7.72	2.15

Bulb pyriform, with relatively simple distal processes (figs. 233, 234); seven spines in compact bunch on ventral surface at base of processes.

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

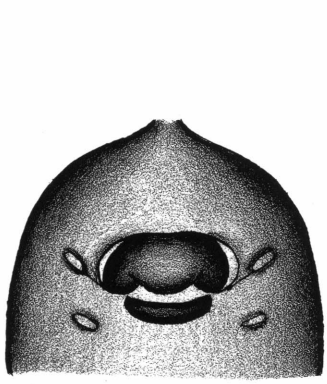
DISTRIBUTION: Known only from New South Wales, Australia.

Tasmanoonops complexus, new species
Figures 236–243, 245–248, 833, 834

TYPES: Male holotype and female paratype from rainforest litter in Lamington National Park, southeastern Queensland, Australia (March 28, 1976; R. J. Raven and V. E. Davies), deposited in QMB.

ETYMOLOGY: The specific name refers to the modifications of the male palpal bulb.

DIAGNOSIS: The absence of a lateral flange on the claws differentiates the male of this species from all others; the presence of a prominent sclerotic plate in front of and be-



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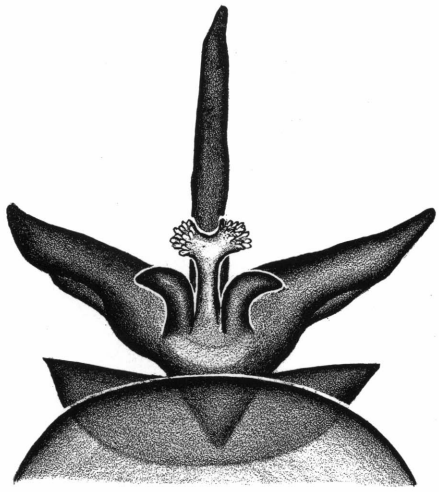

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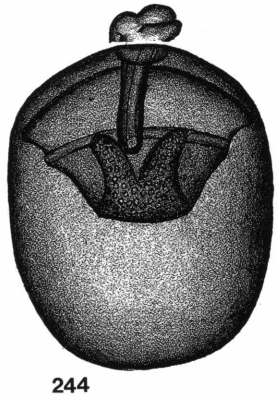


244

FIGS. 242–244. Female genitalia. 242, 243. *Tasmanoonops complexus,* new species. 244. *Hickmanolobus mollipes* (Hickman). 242. Anteroventral view of abdomen, showing the epigastric plate. 243. Anterior portion of internal genitalia. 244. Internal genitalia.

hind the epigastric furrow is diagnostic for the female.

MALE: Total length 5.32. Carapace 2.65 long, 2.04 wide. Abdomen 2.75 long, 1.52 wide. Eye length ratio, ALE:PME:PLE, 9:10: 10; PLE separated by slightly more than twice their diameter. Leg spination: tibiae: III p1-1-1, v0-1-0, r0-1-1; IV p1-1-0, v0-1-2, r1-1-1; metatarsi: III p1-1-1, v1-1-2, r1-0-1; IV d1-1-1, p1-1-1, v2-2-2, r1-1-1. Tarsal organ relatively low, surrounded by numerous cuticular lobes (fig. 241); three receptor lobes but median lobe reduced; proprioreceptor bristles with lateral spines, branched distally (fig. 240). Claws long, slender, neither margin with distinct lateral flange (fig. 245).

	I	II	III	IV	Palp
Femur	2.52	2.65	2.71	3.12	0.91
Patella	1.15	1.05	0.88	1.05	0.53
Tibia	2.41	2.45	1.73	2.31	0.32
Metatarsus	2.57	2.62	2.14	3.04	—
Tarsus	0.93	0.95	0.75	0.82	0.61
Total	9.58	9.72	8.21	10.34	2.37

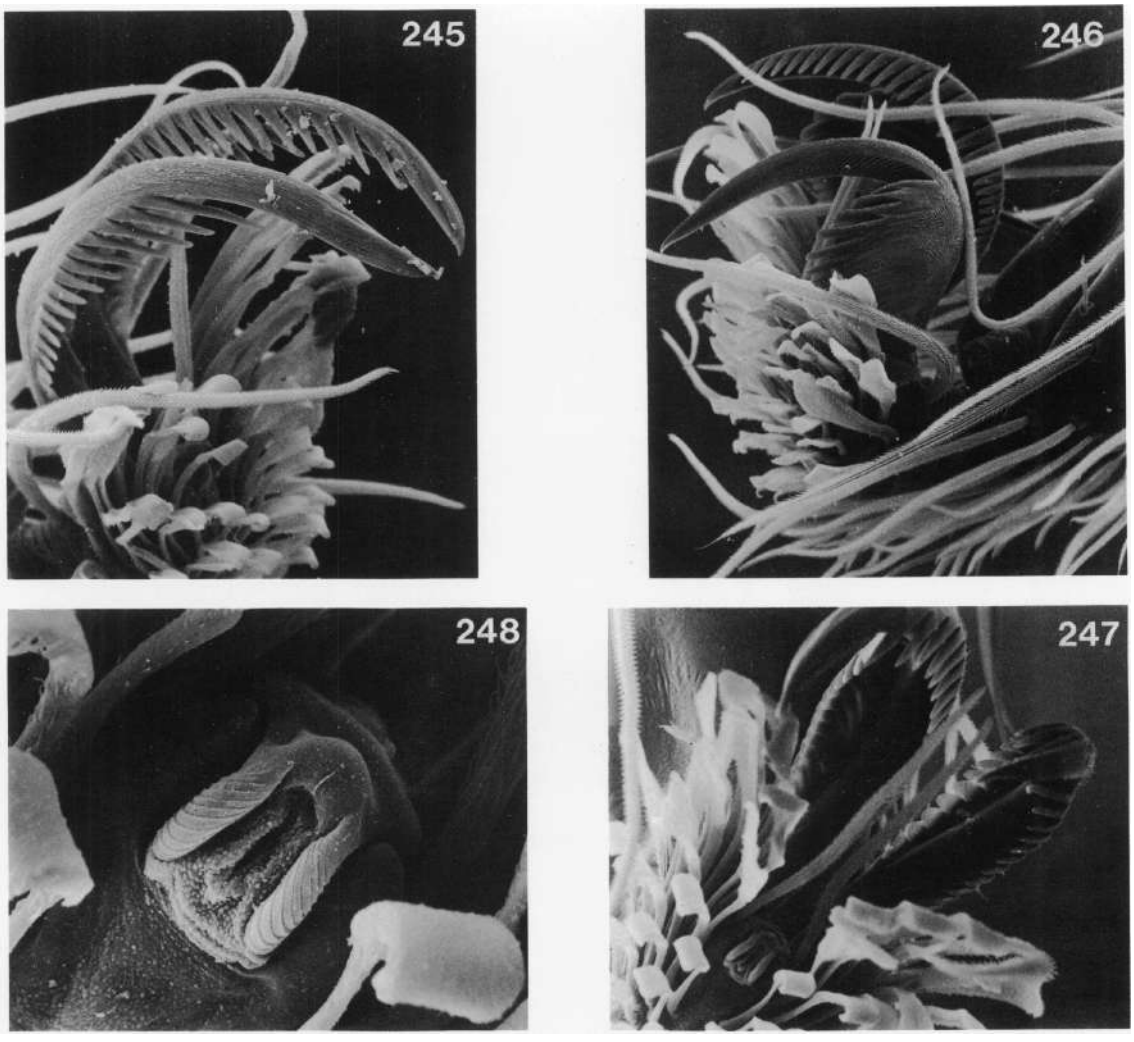
Bulb with massive, distal horn-shaped process leading back to similar but smaller projection (figs. 236–239); several short spines present on ventral surface; further group of longer spines on flap extending dorsally over embolus; embolus short, conical.

FEMALE: As in male, except for the following. Total length 6.04. Carapace 2.51 long, 1.94 wide. Abdomen 3.43 long, 1.85 wide. Anterior spinnerets with denticles. Claws on all legs similar, with typical lateral flanges (figs. 246–248).

	I	II	III	IV	Palp
Femur	2.53	2.45	1.83	3.15	0.65
Patella	1.05	1.06	1.04	1.15	0.57
Tibia	2.04	2.12	1.55	2.23	0.59
Metatarsus	2.34	2.41	1.91	2.86	—
Tarsus	0.91	0.85	0.73	0.85	1.03
Total	8.87	8.89	7.06	10.24	2.84

Heavily sclerotized plate present over epigastric region, thinner plate behind furrow (fig. 242); internal genitalia (fig. 243) with receptaculum present as short, bilobed structure (shown in side view in association with muscle plates in fig. 834).

OTHER MATERIAL EXAMINED: AUSTRALIA: *southeastern Queensland:* Binna Burra, Lamington National Park, collected at night (Mar. 30, 1976; R. J. Raven, V. E. Davies; QMB); Mount Hobwee, Lamington National Park (Apr. 3–8, 1976; R. J. Raven, V. E. Davies; QMB); Nagarigoon, Lamington National Park, under logs and in moss (May 1, 1976; V. E. Davies; QMB).



FIGS. 245–248. *Tasmanoonops complexus*, new species. 245. Claws of male. 246. Claws of female. 247. Ventral view of claws of female, showing the ventral pad. 248. Enlargement of the ventral pad.

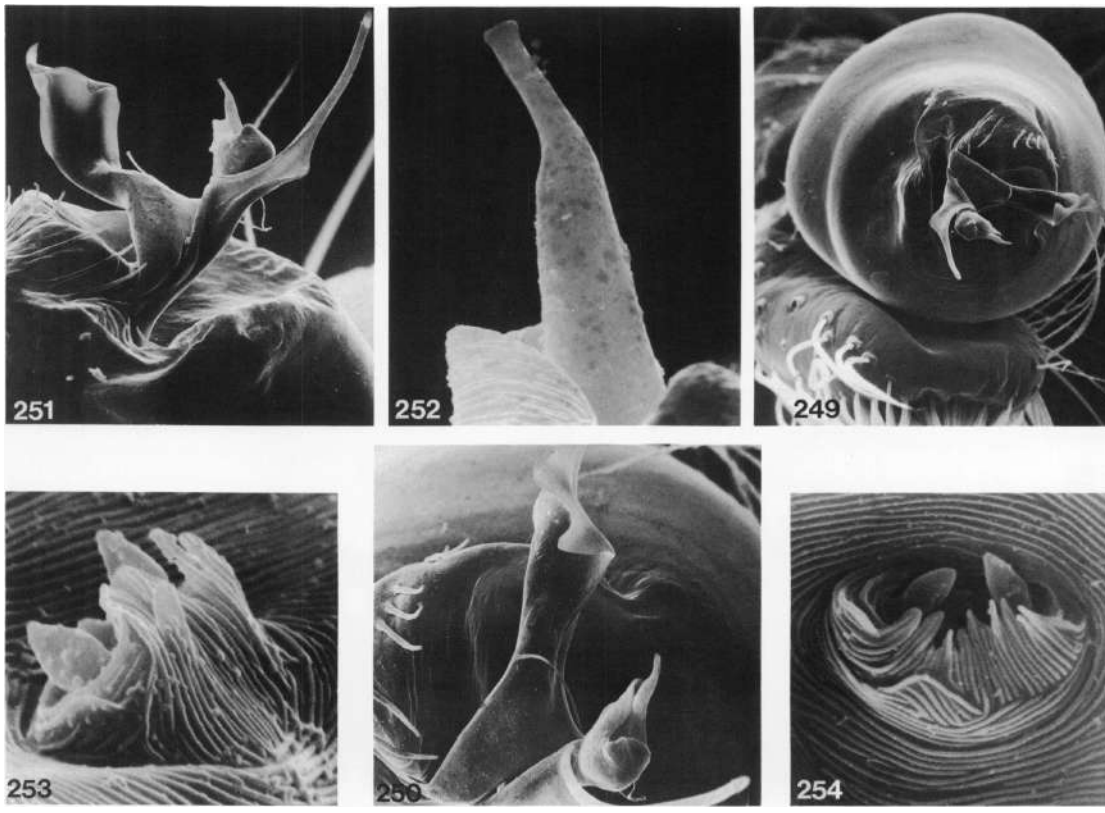
DISTRIBUTION: Known only from southeastern Queensland, Australia.

DISCUSSION: In both genitalic and other characters this species is the most distinctive *Tasmanoonops* recorded from Australia. The loss of the lateral flanges from the claws of the male is accompanied by an elongation of the claw itself. The unusual development of plates above the genitalia gives the appearance of a typical entelegyne epigynum, but there is no connection between the external plates and the internal genitalia.

Tasmanoonops daviesae, new species
Figures 215, 249–258, 278, 882, 883

TYPES: Male holotype and female paratype from rainforest litter at Crediton, mideastern Queensland, Australia (April 14–21, 1975; V. E. Davies), deposited in QMB.

ETYMOLOGY: The specific name is a patronym in honor of Dr. Valerie Davies of the Queensland Museum, who has collected much of the Australian material described in this paper.



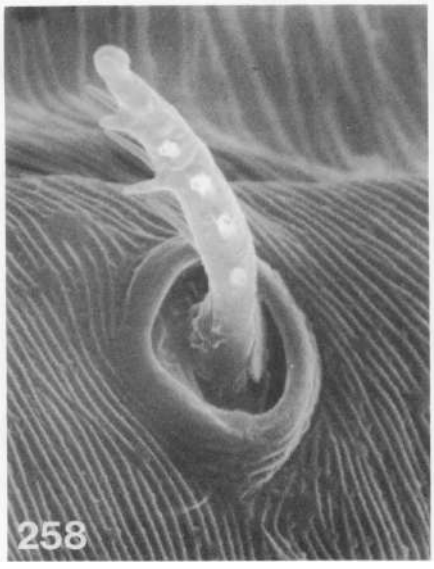
FIGS. 249–254. *Tasmanoonops daviesae,* new species. 249–251. Male palp. 252. Embolus. 253, 254. Tarsal organ.

DIAGNOSIS: This species is clearly distinguished from all others by the small size, the form of the male and female genitalia, the reduced form of the tarsal organ, its pyriform receptor lobes, and the modified claws on legs I and II.

MALE: Total length 2.44. Carapace 1.13 long, 0.95 wide. Abdomen 1.35 long, 0.72 wide. Eye length ratio, ALE:PME:PLE, 6:5:5; PLE separated by almost three times their width. Leg spination: tibiae: III p0-1-1, v0-1-2, r0-1-0; IV d0-1-0, p2-2-1; metatarsi: III p0-1-1, r0-1-1; IV p0-1-1, v0-0-2, r0-1-1. Tarsal organ (figs. 253, 254) very low, anterior margin level with tarsal surface; two receptor lobes, directed anteriorly, widest midway, giving them pyriform outline; proprioreceptor bristles relatively short, stout, with strong lateral projections, not divaricated distally (fig. 258). Claws of legs I and II markedly dissimilar (figs. 255, 256), outer row on prolateral claw consisting of five strong teeth born on distinct lateral flange whereas on retrolateral claw outer row of teeth much smaller, as on inner row; claws of legs III and IV not modified in this way but outer row of teeth not on distinctive lateral flange (fig. 257), little different from inner row.

	I	II	III	IV	Palp
Femur	0.95	1.12	0.91	1.21	0.42
Patella	0.48	0.53	0.33	0.43	0.15
Tibia	0.76	0.91	0.62	0.95	0.12
Metatarsus	0.92	0.92	0.72	1.05	—
Tarsus	0.41	0.43	0.32	0.35	0.36
Total	3.52	3.91	2.90	3.99	1.05

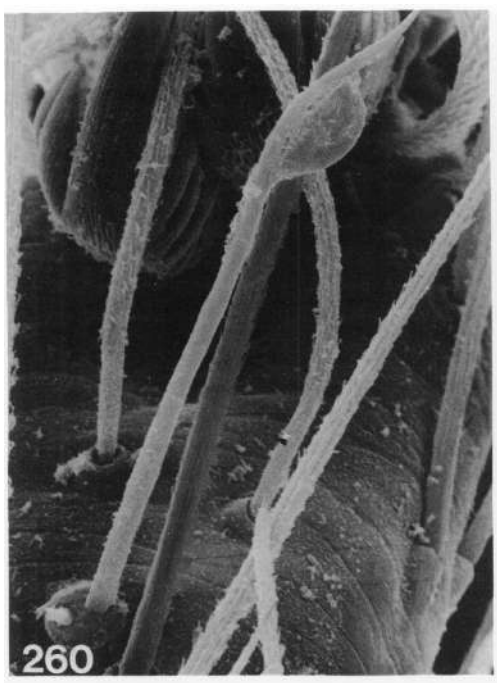
Bulb pyriform, with distal portion only slightly constricted; embolus tubular (fig. 252), associated with three median processes (figs.

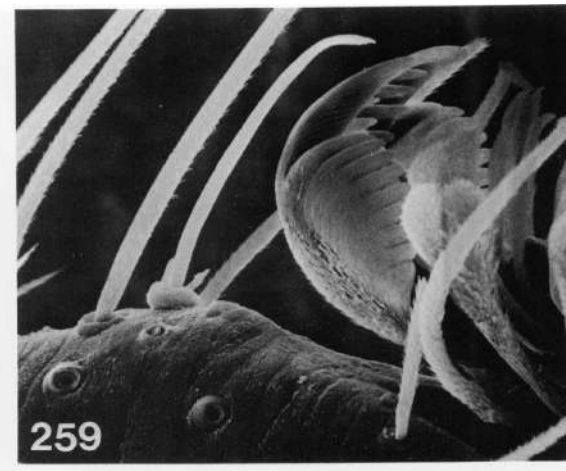


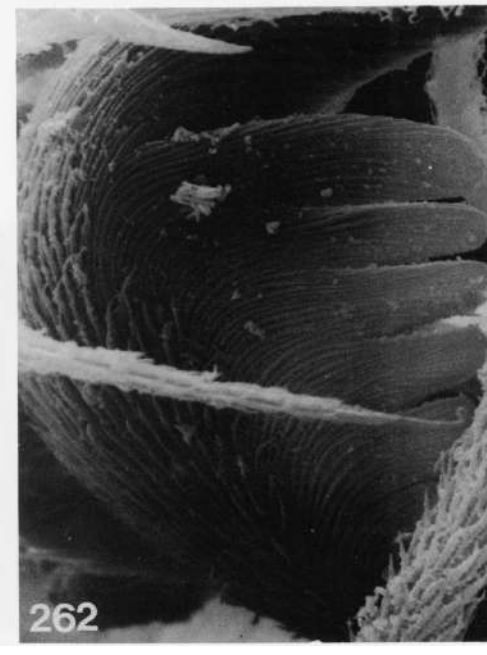
FIGS. 255–258. *Tasmanoonops daviesae,* new species. 255, 256. Claws of leg I, showing the different development of the two claws. 257. Claws of leg IV, showing both claws similar, with only limited development of the lateral flange. 258. Proprioreceptor bristle.

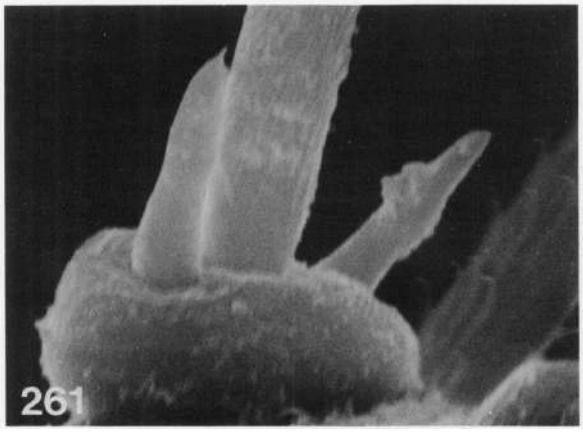
249–251); group of seven slender spines on ventral surface of bulb immediately behind processes.

FEMALE: As in male, except for the following. Total length 3.19. Carapace 1.25 long, 1.04 wide. Abdomen 1.91 long, 1.06 wide. Anterior spinnerets with denticles. First two pairs of claws not modified as in male.









FIGS. 259–262. *Tasmanoonops unicus*, new species. 259–261. Tarsal organ. 262. Claws of leg I.

	I	II	III	IV	Palp
Femur	1.17	0.98	0.95	1.35	0.31
Patella	0.50	0.48	0.40	0.47	0.10
Tibia	0.80	0.94	0.65	0.97	0.23
Metatarsus	0.77	0.95	0.63	1.10	—
Tarsus	0.37	0.35	0.32	0.35	0.38
Total	3.61	3.70	2.95	4.24	1.02

Epigastric region not sclerotized; anterior receptacula very distinctive, consisting of two long, coiled tubes covered with projecting lobes through which secretory cells discharge (figs. 215, 278) much as in *Segestria*; receptacula merging, leading through single duct back to base of median rod; posterior receptaculum large, membranous, with few secretory lobes.

OTHER MATERIAL EXAMINED: Other specimens collected with the types (QMB) and taken at an elevation of 1120 m at rainforest site 15 on the lower slopes of Mount Williams, Dalrymple Heights, near Eungella,

mideastern Queensland, Australia (April 1975; M. R. Gray, C. Horseman; AMS).

DISTRIBUTION: Known only from mideastern Queensland, Australia.

Tasmanoonops unicus, new species
Figures 217, 259–262

TYPE: Female holotype from rainforest litter in Malaan State Forest, near Millamilla, northern Queensland, Australia (July 30, 1956; T. E. Woodward), deposited in QMB.

ETYMOLOGY: The specific name refers to the sole specimen available for study.

DIAGNOSIS: This species seems most closely related to *T. septentrionalis* but is smaller and has two secondary receptor lobes on the tarsal organ rather than one.

MALE: Unknown.

FEMALE: Total length 2.10. Carapace 1.05 long, 0.72 wide. Abdomen 1.04 long, 0.62 wide. Eyes equal in size; PLE separated by 2.5 times their diameter. Anterior spinnerets without denticles. Leg spination: tibiae: III p1-1-0, v0-1-2, r1-1-0; IV p1-1-1, v1-1-2; metatarsi: III p0-1-0, v1-1-2; IV p1-1-1, v1-1-2, r1-1-1. Tarsal organ resembling that found in some New Zealand genera, with basal tubercle small, smooth, with three receptor spines of which outer pair small, median spine extremely well developed, only slightly shorter than adjacent tarsal hairs (figs. 259–261). Teeth on lateral flanges of claws bluntly rounded (fig. 262).

	I	II	III	IV	Palp
Femur	0.72	0.68	0.56	0.76	0.18
Patella	0.36	0.36	0.25	0.36	0.07
Tibia	0.54	0.49	0.38	0.59	0.14
Metatarsus	0.52	0.49	0.45	0.67	—
Tarsus	0.29	0.27	0.27	0.27	0.23
Total	2.43	2.29	1.91	2.65	0.62

Internal genitalia relatively simple (fig. 217), with short, columnar anterior receptaculum slightly distended distally where secretory gland is situated; posterior receptaculum large, with narrow neck leading into bursa.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from northern Queensland, Australia.

DISCUSSION: It is uncertain whether this interesting little species and the related *T. septentrionalis*, *T. minutus*, *T. oranus*, and *T. parinus* are correctly placed in *Tasmanoonops*. The only known character which separates them from the other species of the genus is the form of the tarsal organ. Experience with the New Zealand and Chilean orsolobids has demonstrated that the spiniform tarsal organ is diagnostic for a number of genera and in no instance can any species with this form of tarsal organ be considered congeneric with other species possessing small receptor nodes. A similar situation arises with the Australian species *T. drimus*, *T. pinus*, *T. trispinus*, and *T. mysticus*, which also have very distinctive tarsal organs.

Tasmanoonops septentrionalis, new species
Figures 231, 263–270

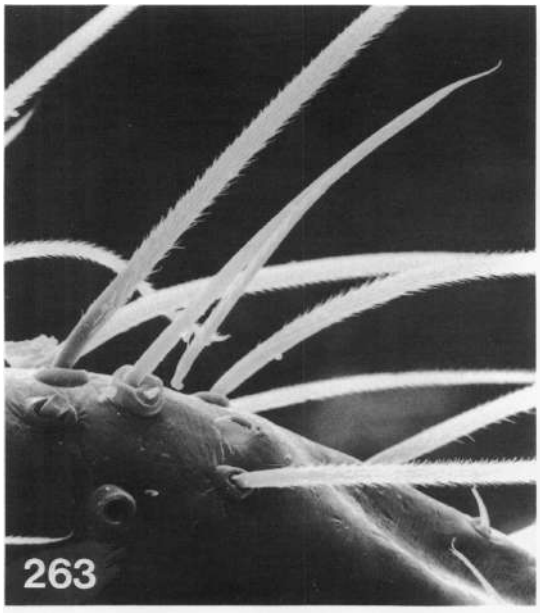
TYPES: Male holotype and female paratype taken at an elevation of 1560 m at the summit television station on the Bellenden Ker range, northern Queensland, Australia (October 17–24, 1981; Earthwatch-Queensland Museum Expedition), deposited in QMB.

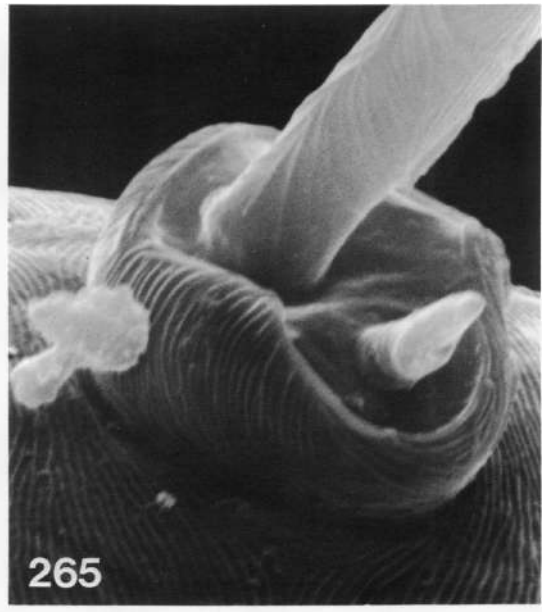
ETYMOLOGY: The specific name refers to the northern distribution.

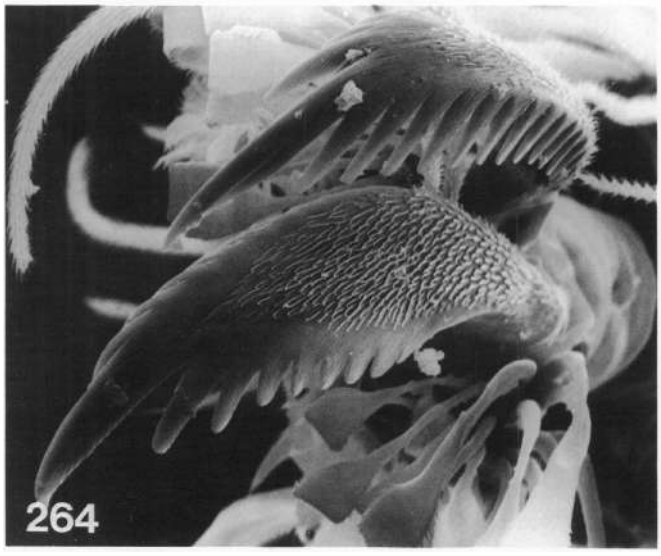
DIAGNOSIS: This species is separated from the related *T. unicus* by the form of the tarsal organ, which bears a similarly erect receptor spine but differs in having only a single accessory receptor node, and by the form of the female genitalia.

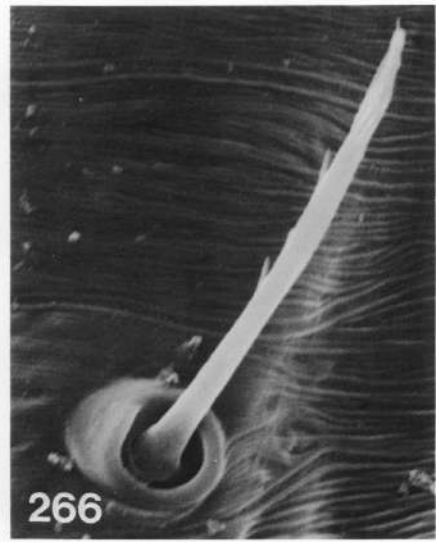
MALE: Total length 3.64. Carapace 1.53 long, 1.17 wide. Abdomen 2.07 long, 0.99 wide. Eye sizes and grouping typical. Leg spination: tibiae: III p1-1-1, v1-1-2, r1-1-0; IV p1-1-1, v0-1-2, r1-1-1; metatarsi III, IV p1-1-0, v1-1-2, r1-1-0. Tarsal organ (figs. 263, 265) with long receptor spine rising from low mound; apical region of mound concave, bearing single accessory lobe; proprioreceptor bristles weakly serrate (fig. 266). Claws similar to those of *T. unicus*, with lateral flange bearing eight short teeth (fig. 264).

	I	II	III	IV	Palp
Femur	1.35	1.26	1.08	1.62	0.53
Patella	0.63	0.54	0.45	0.54	0.21
Tibia	1.08	0.99	0.81	1.17	0.19
Metatarsus	0.99	0.90	0.90	1.35	—
Tarsus	0.45	0.46	0.36	0.45	0.50
Total	4.50	4.15	3.60	5.13	1.43





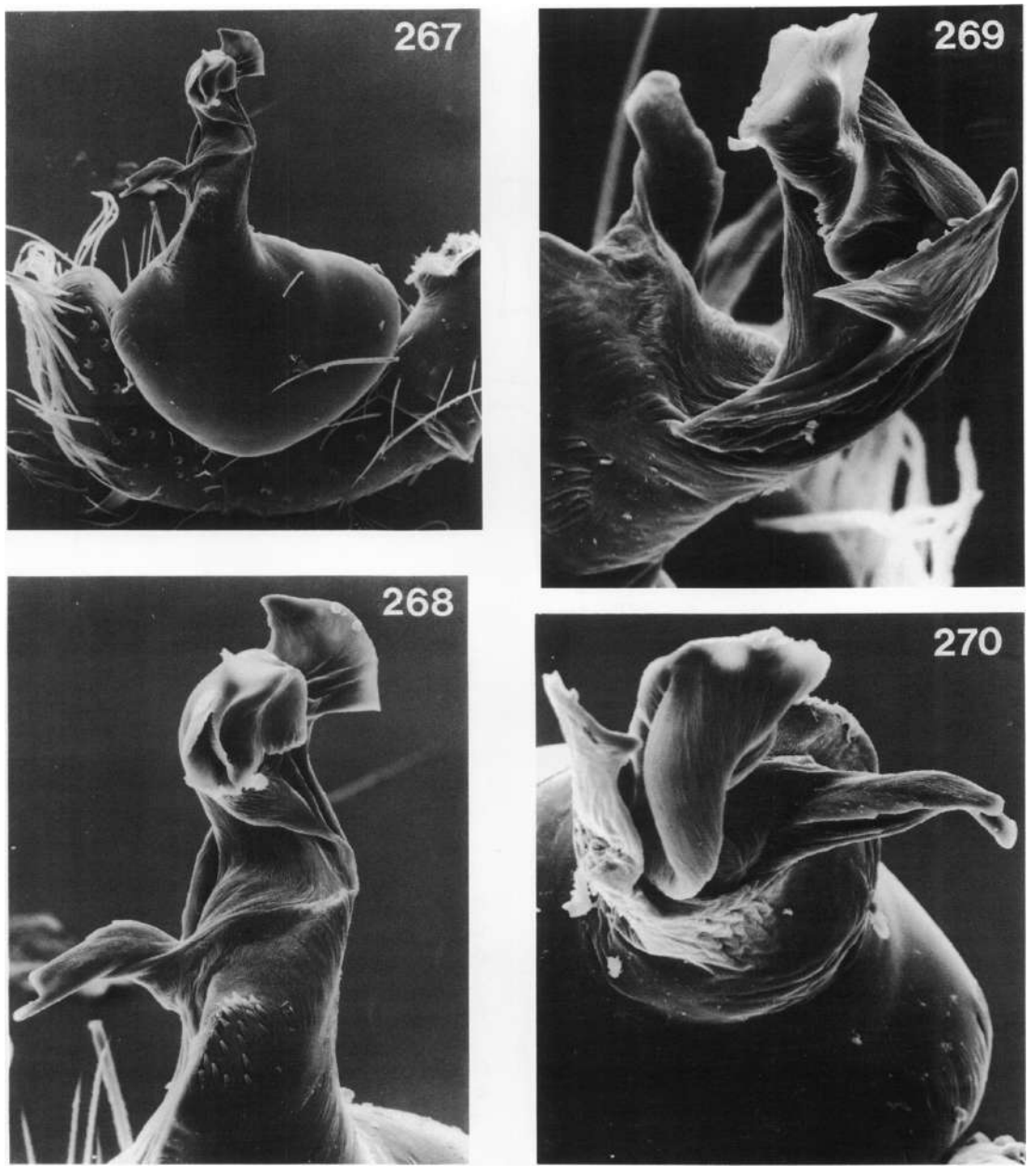




FIGS. 263–266. *Tasmanoonops septentrionalis*, new species. 263, 265. Tarsal organ. 264. Claws of leg I. 266. Proprioreceptor bristle.

Cymbium of palp relatively long, twice as long as tibia; bulb large, resting along almost full length of cymbium, with stout ventral trunk arising from subdistal surface (fig. 267); embolus short, conical tube associated with series of distal plates and conspicuous lateral projection (figs. 268, 269); group of small denticles present on retrolateral surface of trunk (fig. 270).

FEMALE: As in male, except for the following. Total length 4.00. Carapace 1.26 long, 1.17 wide. Abdomen 2.70 long, 1.62 wide. Anterior spinnerets with denticles on mid-ventral and distal surfaces.

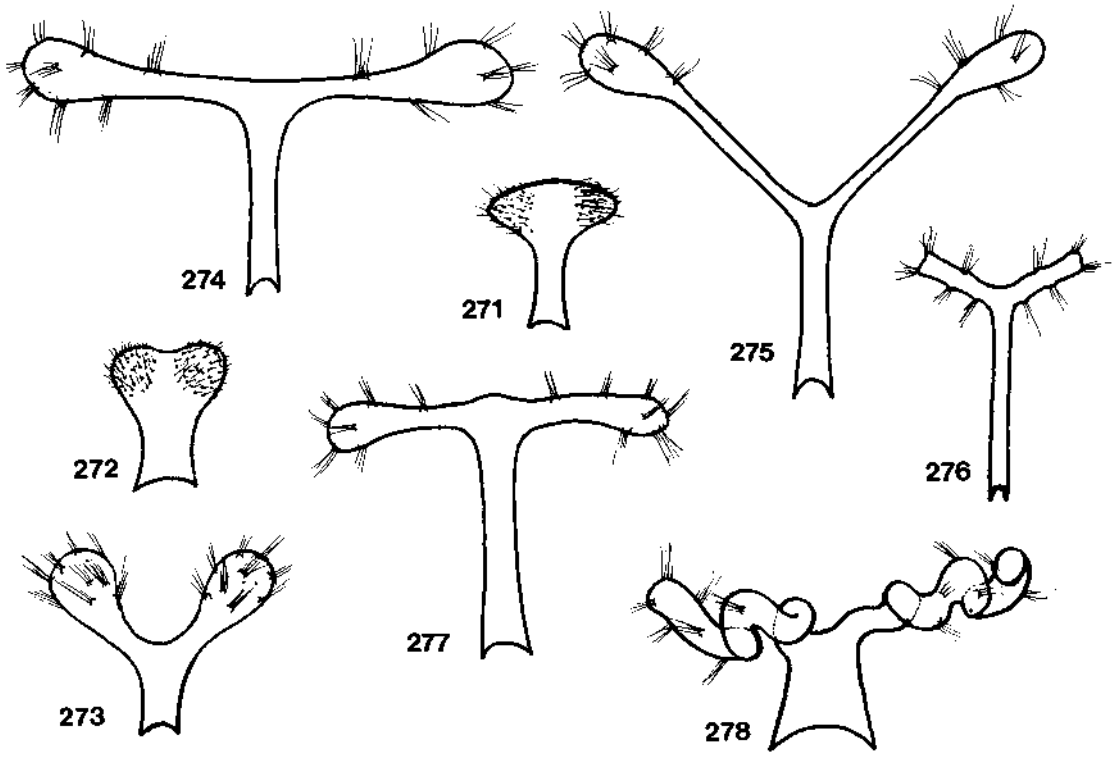


FIGS. 267–270. *Tasmanoonops septentrionalis*, new species, male palp.

	I	II	III	IV	Palp
Femur	1.26	1.17	0.99	1.44	0.54
Patella	0.54	0.54	0.45	0.54	0.19
Tibia	0.99	0.99	0.91	1.17	0.27
Metatarsus	0.99	0.99	0.90	1.35	—
Tarsus	0.45	0.45	0.45	0.45	0.54
Total	4.23	4.14	3.70	4.95	1.54

Epigastric region lightly sclerotized but not strongly pigmented; internal genitalia similar to that of *T. unicus* but transverse plate shorter and single anterior receptaculum larger (fig. 231).

OTHER MATERIAL EXAMINED: AUSTRALIA: *northern Queensland:* summit TV sta-



FIGS. 271–278. Anterior receptacula of *Tasmanoonops*, showing ducts of secretory glands. 271. *T. pinus*, new species. 272. *T. drimus*, new species. 273. *T. ripus*, new species. 274. *T. minutus*, new species. 275. *T. oranus*, new species. 276. *T. parinus*, new species. 277. *T. elongatus*, new species. 278. *T. daviesae*, new species.

tion, Bellenden Ker range (June 10, 1980; G. Monteith; QMB); left bank, Mount Bartle-Frere summit, elevation 1620 m (Oct. 7–8, 1981; Earthwatch-Queensland Museum Expedition; QMB); northwest Centre Peak ridge, Mount Bartle-Frere, elevation 1400–1500 m (Oct. 7–8, 1981; Earthwatch-Queensland Museum Expedition; QMB).

DISTRIBUTION: Known only from northern Queensland, Australia.

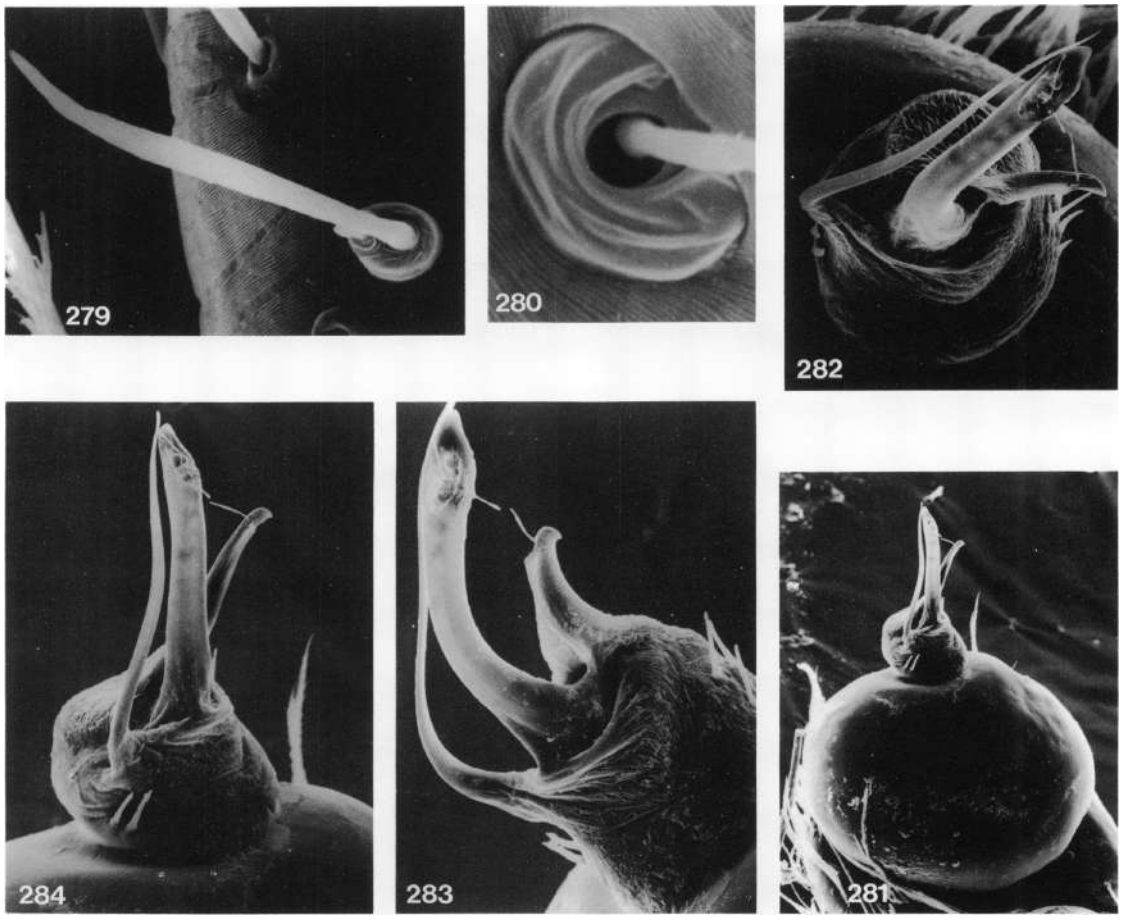
Tasmanoonops minutus, new species
Figures 274, 279–284, 289

TYPES: Male holotype taken in a Berlese sample of fungus from a *Nothofagus* ravine at an elevation of 500 m at Cement Creek, 5 km north of Warburton, Victoria, Australia (May 7, 1978; S. and J. Peck), and female paratype taken in a Berlese sample of litter in a *Nothofagus cunninghami* forest at an elevation of 670 m at the same locality (January 10–17, 1980; A. Newton and M. Thayer), deposited in QMB.

ETYMOLOGY: The specific name refers to the small size of this species.

DIAGNOSIS: The spiniform tarsal organ with only one secondary receptor lobe links this species with *T. septentrionalis*, from which it can be separated by the simpler distal processes on the male palpal bulb and the cruciferiform anterior receptaculum of the female genitalia.

MALE: Total length 1.83. Carapace 0.80 long, 0.64 wide. Abdomen 1.00 long, 0.56 wide. Eye sizes and grouping typical. Leg spination: tibiae: I, II v1-1-0; III p0-1-1, v1-1-2; IV p0-1-1, v1-1-2, r0-1-1; metatarsi: I, II v0-1-0; III p0-1-1, v1-1-2; IV p0-1-1, v1-1-2, r1-1-1. Tarsal organ provided with strong, erect receptor spine almost as thick as adjacent hairs but only half as long; second short



FIGS. 279–284. *Tasmanoonops minutus*, new species. 279. Tarsal organ from leg I. 280. Trichobothrium. 281–284. Male palp.

receptor lobe present (fig. 279). Claws with distinct lateral flange provided with about 10 relatively long teeth.

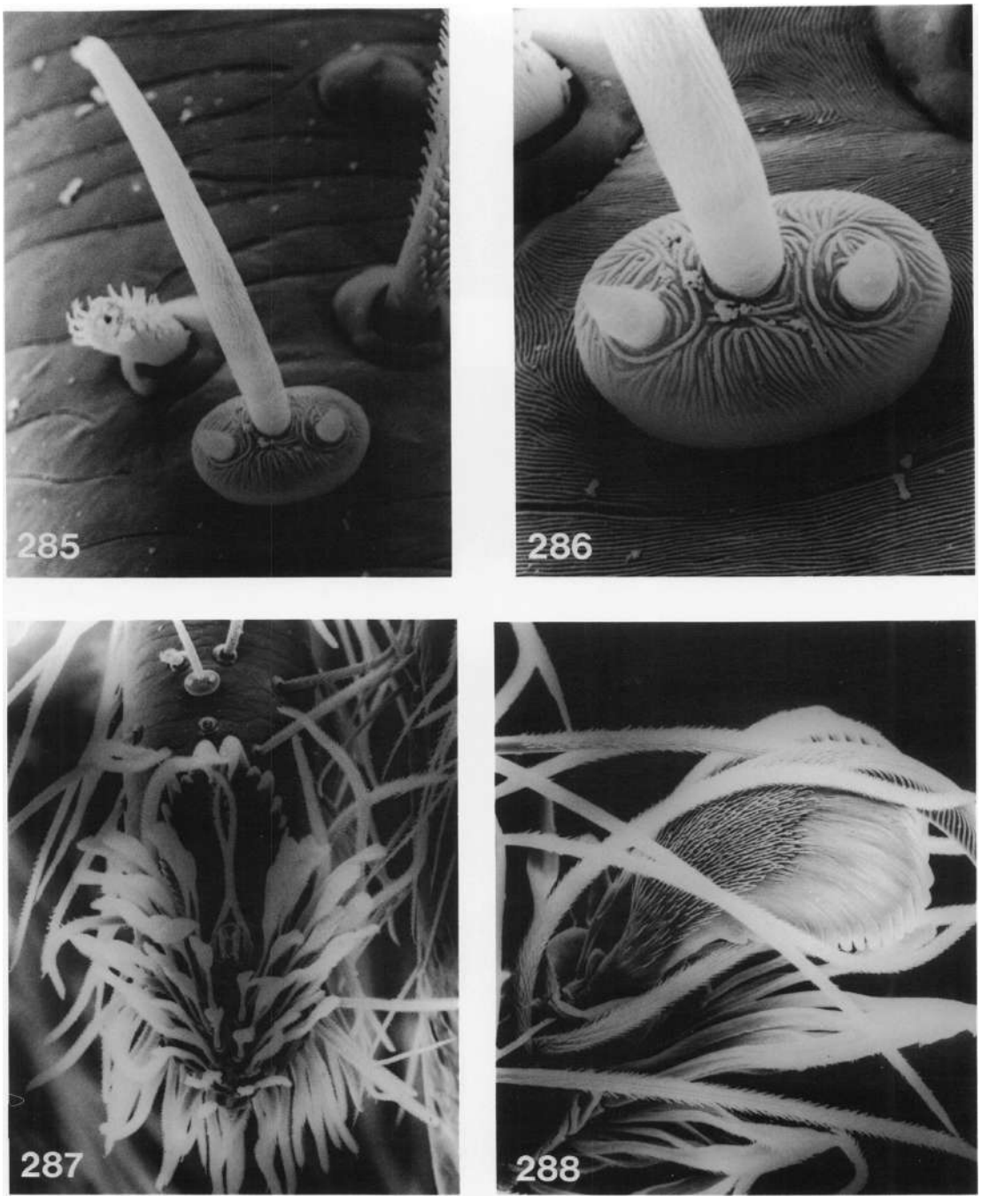
	I	II	III	IV	Palp
Femur	0.60	0.60	0.56	0.72	0.32
Patella	0.28	0.24	0.20	0.32	0.16
Tibia	0.56	0.52	0.44	0.60	0.12
Metatarsus	0.44	0.44	0.36	0.64	—
Tarsus	0.32	0.32	0.24	0.31	0.17
Total	2.20	2.12	1.80	2.59	0.77

Palpal bulb squat, almost spherical, with distal portion short (figs. 281–284); processes simple, with curved median tubular embolus flanked on retromargin by slender curved spine, on promargin by short spur (fig. 284); few bristles present on both margins.

FEMALE: As in male, except for the following. Total length 1.87. Carapace 0.84 long, 0.64 wide. Abdomen 1.04 long, 0.68 wide. Anterior spinnerets with denticles.

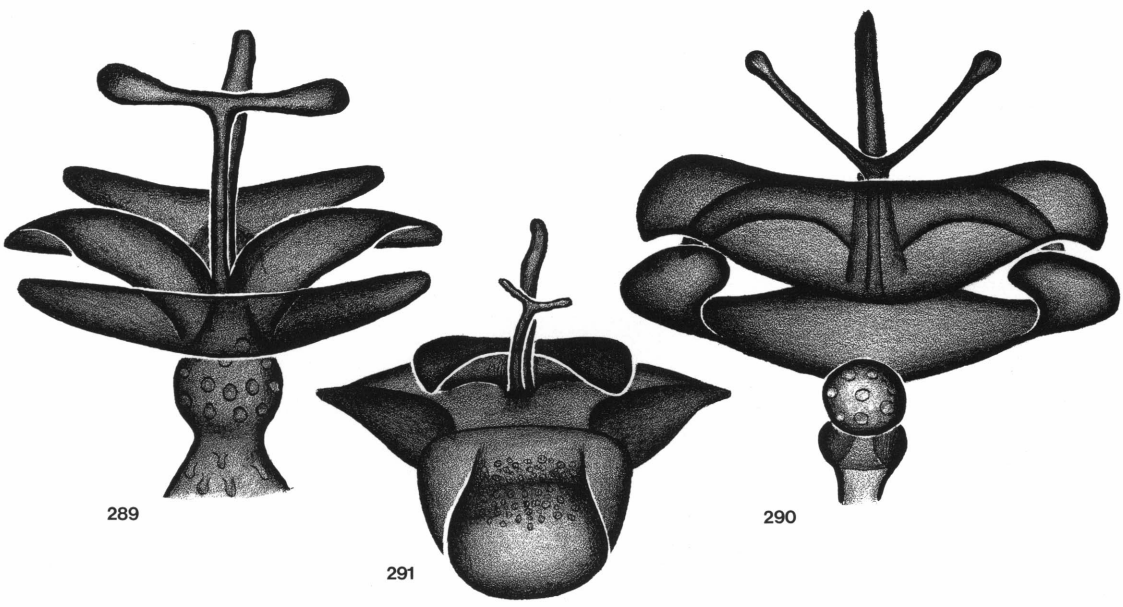
	I	II	III	IV	Palp
Femur	0.60	0.56	0.52	0.68	0.28
Patella	0.32	0.32	0.28	0.28	0.12
Tibia	0.48	0.48	0.36	0.52	0.12
Metatarsus	0.48	0.40	0.36	0.60	—
Tarsus	0.24	0.23	0.22	0.25	0.23
Total	2.12	1.99	1.74	2.33	0.75

Internal genitalia (fig. 289) with anterior receptaculum large, T-shaped, with distal regions of each transverse branch slightly distended (fig. 274); secretory glands restricted to distal half of each arm, opening into lumen through groups of multicellular ducts; pos-



FIGS. 285–288. *Tasmanoonops oranus*, new species. 285, 286. Tarsal organ from leg I. 287. Tip of tarsus I, showing claws, claw tuft, and tarsal organ. 288. Claws of leg I.

terior receptaculum typical large membranous sac but basal portion distended, provided with pits, each of which bears several secretory pores.



FIGS. 289–291. Internal female genitalia of *Tasmanoonops*. 289. *T. minutus*, new species, anterior and portion of posterior genitalia. 290. *T. oranus*, new species, same. 291. *T. parinus*, new species; note the small posterior receptaculum and absence of the typical lobulate secretory pores.

OTHER MATERIAL EXAMINED: One male taken with the holotype (AMNH).

DISTRIBUTION: Known only from Victoria, Australia.

Tasmanoonops oranus, new species
Figures 275, 285–288, 290

TYPE: Female holotype taken in a window trap in a *Nothofagus cunninghami* forest at an elevation of 670 m at Cement Creek, Warburton, Victoria, Australia (January 10–17, 1980; A. Newton and M. Thayer), deposited in QMB.

ETYMOLOGY: The specific name is an arbitrary combination of letters.

DIAGNOSIS: This species is closely related to the sympatric *T. minutus* but can be separated by its larger size, the presence of two accessory receptor lobes (rather than one) on the tarsal organ, the different form of the anterior receptaculum of the female genitalia, and differences in the leg spination and tarsal claws.

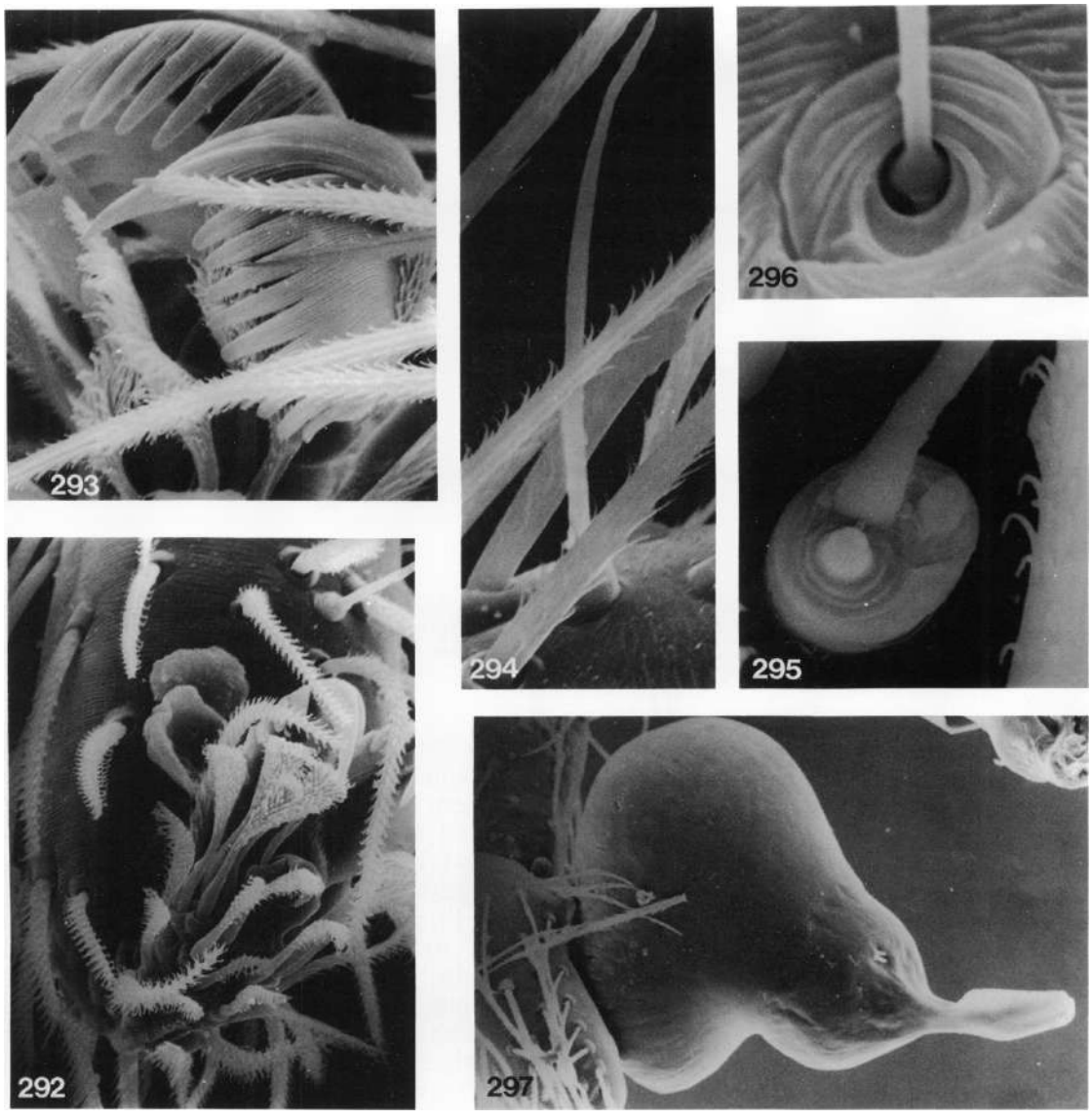
MALE: Unknown.

FEMALE: Total length 4.21. Carapace 1.76 long, 1.28 wide. Abdomen 2.40 long, 1.68 wide. Eye sizes and grouping typical. Anterior spinnerets with denticles. Leg spination: femora: I p0-0-2; II p0-0-1; tibiae: I v1-1-1; II p1-1-0, v1-1-1; III d1-1-0, p1-1-1, v1-1-2, r1-1-1; IV d0-1-0, p1-1-1, v1-1-2, r1-1-1; metatarsi: I, II v1-1-0; III p1-1-1, v2-2-2, r1-1-1; IV p1-1-1, v2-3-2, r1-1-1. Tarsal organ with strong median spine extending from middle, flanked on each side by short receptor lobe (figs. 285, 286); median spine not as stout as adjacent hairs, about one-third their length. Lateral flanges of claws large, with short inwardly curving teeth fringing margin (figs. 287, 288).

	I	II	III	IV	Palp
Femur	1.76	1.62	1.52	2.00	0.56
Patella	0.72	0.64	0.48	0.72	0.40
Tibia	1.52	1.52	1.12	1.62	0.48
Metatarsus	1.44	1.44	1.36	2.08	—
Tarsus	0.64	0.56	0.56	0.64	0.79
Total	6.08	5.78	5.04	7.06	2.23

Internal genitalia similar to that of *T. minutus* but arms of anterior receptaculum directed forward (figs. 275, 290).

OTHER MATERIAL EXAMINED: A second fe-



FIGS. 292–297. *Tasmanoonops parinus,* new species. 292. Claw tuft and tarsal organ of leg I. 293. Claws of leg I. 294, 295. Tarsal organ from leg I. 296. Trichobothrium. 297. Male palp.

male from the type locality but collected from wet moss along a stream edge (AMNH).

DISTRIBUTION: Known only from Victoria, Australia. The fact that two closely related species should be found in the same locality is unusual. It might be suggested that this species is just a large form of *T. minutus,* but the differences in all of the characters examined are such that there remains little doubt that two species are involved.

Tasmanoonops parinus, new species
Figures 276, 291–297

TYPES: Female holotype taken in *Nothofagus* forest litter at an elevation of 1000 m at Burraga Track, Barrington Tops, Mount Allyn, New South Wales, Australia (June 17–July 16, 1978; S. and J. Peck), and male paratype taken in a wet sclerophyll forest at O'Sullivans Gap Reserve, Bulahdelah, New

South Wales, Australia (June 17–July 15, 1978; S. and J. Peck), deposited in QMB.

ETYMOLOGY: The specific name is an arbitrary combination of letters.

DIAGNOSIS: The species is related to *T. oranus* and *T. minutus* but can be separated from both by the form of the female genitalia, which lacks the large membranous posterior receptaculum. It can also be separated from *T. minutus* by the structure of the male palpal bulb and the presence of two accessory receptor lobes on the tarsal organ.

FEMALE: Total length 1.74. Carapace 0.68 long, 0.48 wide. Abdomen 1.04 long, 0.44 wide. Eye sizes and grouping typical. Anterior spinnerets with denticles. Leg spination: tibiae: III p1-1-0, v0-1-2, r0-1-0; IV p0-1-0, v0-1-2, r0-1-1; metatarsi: III p0-1-0, v1-1-2, r0-1-0; IV p1-1-0, v1-1-2, r0-1-0. Median spine of tarsal organ much more slender than adjacent hairs, about half as long (figs. 292, 294); two accessory receptor lobes low, rounded (fig. 295). Lateral flanges of claws with 10 relatively long teeth along margin (fig. 293).

	I	II	III	IV	Palp
Femur	0.44	0.40	0.33	0.48	0.16
Patella	0.16	0.16	0.16	0.20	0.08
Tibia	0.40	0.28	0.24	0.32	0.12
Metatarsus	0.32	0.28	0.24	0.40	—
Tarsus	0.21	0.20	0.16	0.21	0.20
Total	1.53	1.32	1.13	1.61	0.56

Internal genitalia (fig. 291) with anterior receptaculum T-shaped (fig. 276), much weaker than in either *T. oranus* or *T. minutus*; small, squat posterior receptaculum with localized secretory mass on dorsal surface discharging through several pores perforating number of small, irregular plates restricted to this region.

MALE: The single male available is in bad condition, with all the appendages except the palpi detached from the carapace. The palpi are intact, however, and the form of the bulb is shown in figure 297. The distal portion is simple, expanded into a concave plate; there are two minute spines on the midretrolateral surface of the distal constricted portion.

OTHER MATERIAL EXAMINED: Three females taken with the holotype and a further female from rainforest log litter taken at an elevation of 200 m at Bruxner Park, north of Coffs Harbour, New South Wales, Australia (July 9–15, 1978; S. and J. Peck; AMNH).

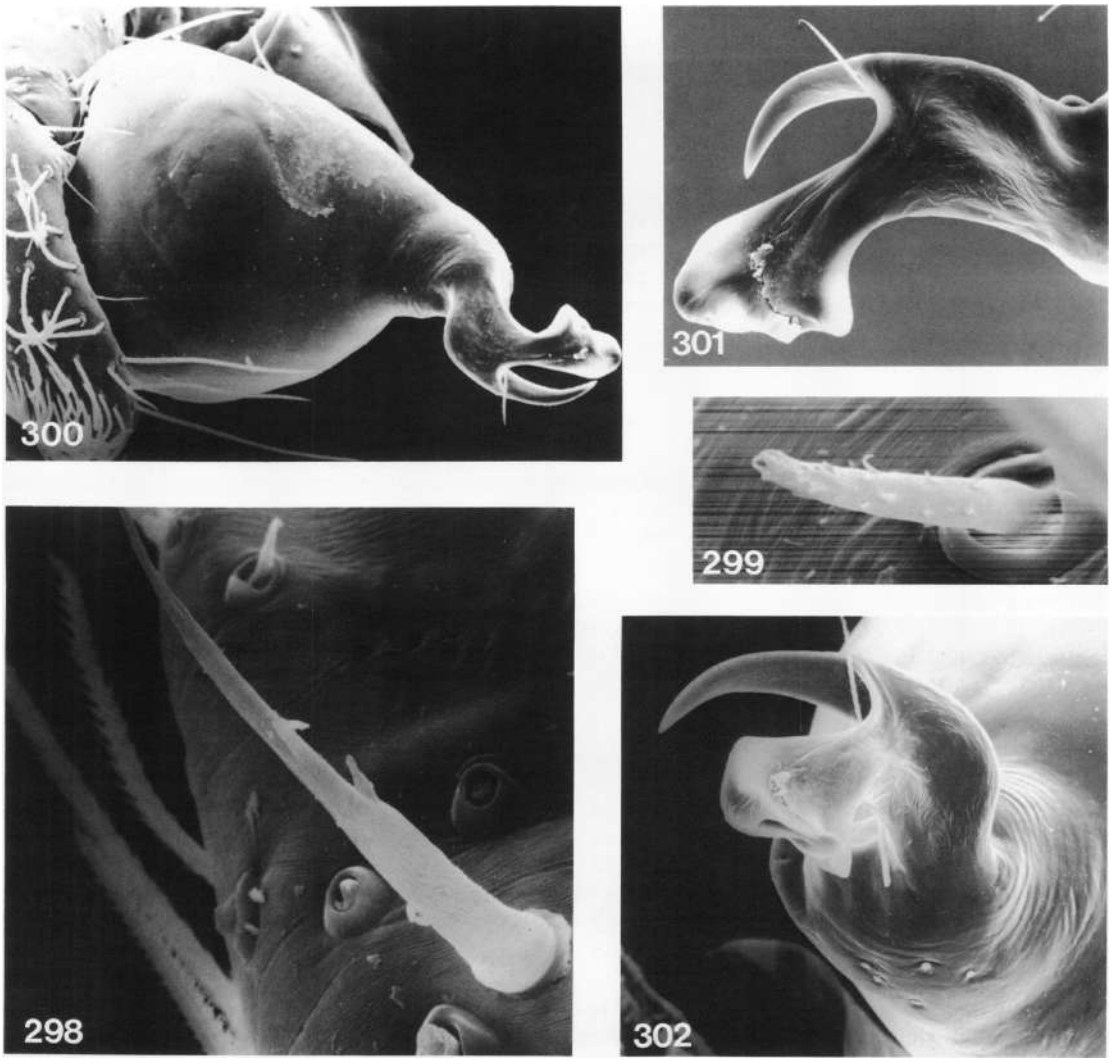
DISTRIBUTION: Known only from New South Wales, Australia.

DISCUSSION: *Tasmanoonops parinus* raises a number of questions. The absence of the large, membranous posterior receptaculum served by a thin layer of secretory tissue opening through invaginated lobes, as found in all other species, suggests that this species should be placed in a separate genus. It is probable, however, that the receptaculum of *T. parinus* is homologous with the spherical anterior portion of the posterior receptaculum found in both *T. oranus* and *T. minutus*, which in those species is served by a separate secretory gland that also discharges through surface pores. If so, the *T. parinus* genitalic arrangement could be plesiomorphic for the posterior receptaculum in this genus.

In addition, however, the claw tufts are very weakly developed, in the sense that most of the hairs are not distally spatulate as in other species (fig. 292); also, the male palpal bulb is simple. Although these characters similarly suggest the establishment of a separate genus, there can be little doubt that the species is closely related to *T. oranus* and *T. minutus*. When the male palpal bulb of *T. minutus* is compared with that of *T. parinus*, it can be seen that two retrolateral spines are present in both species, although they are reduced in *T. parinus*; the distal embolus of *T. parinus* could readily be derived by reduction or fusion from the tripartite bulb of *T. minutus*. The similarities of the tarsal organ and of the anterior portion of the female internal genitalia in the three species are more readily explained as homologies than by convergence. If it is accepted that the three species are closely related, then it becomes difficult to separate them in toto from all other species currently placed in *Tasmanoonops*.

Tasmanoonops drimus, new species
Figures 165, 272, 298–302

TYPES: Male holotype and female paratype taken in a Berlese sample of bark and rotten logs in a temperate rainforest at an elevation of 200 m in Alfred National Park, Victoria, Australia (May 21, 1978; S. and J. Peck), deposited in QMB.



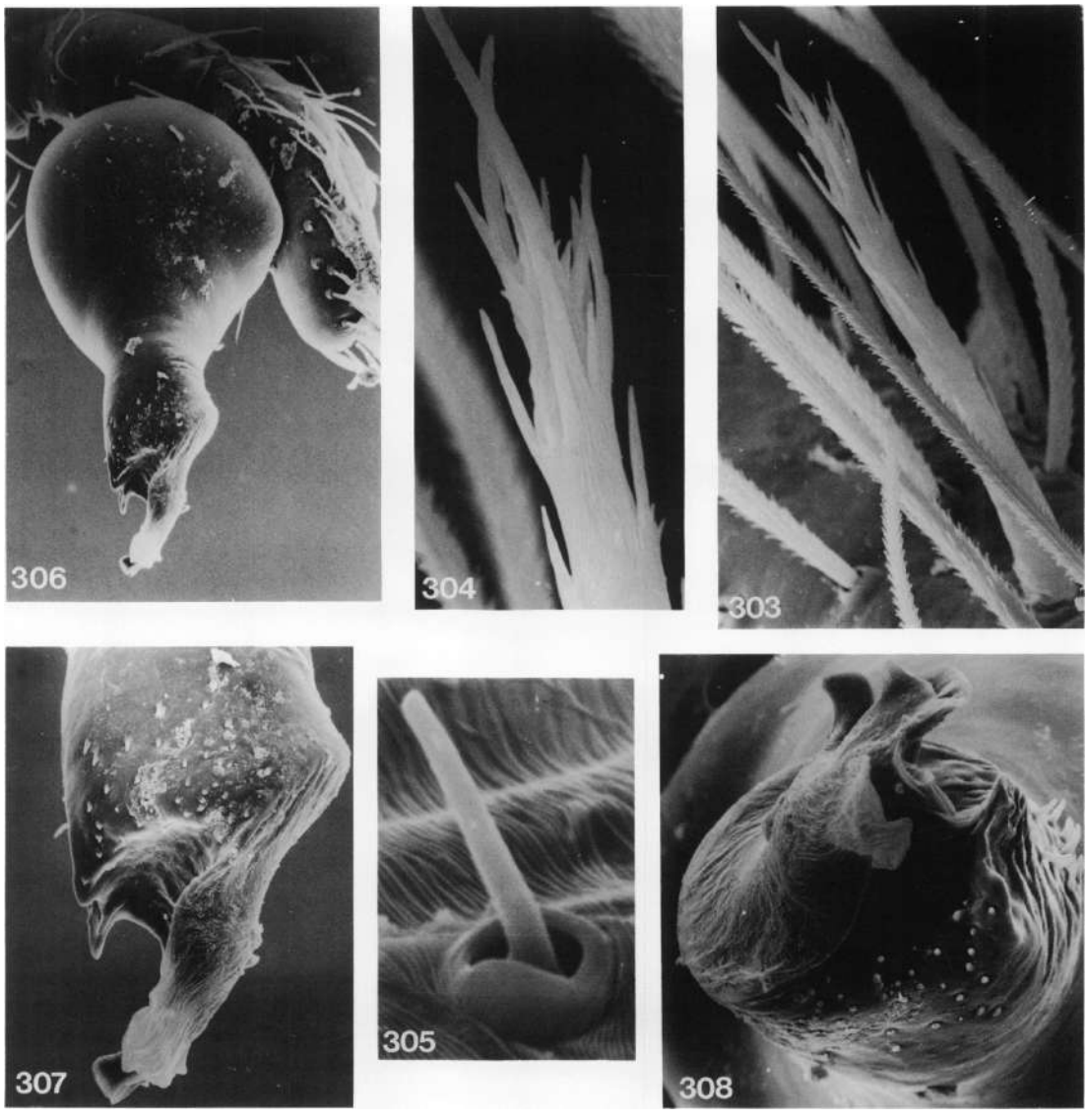
FIGS. 298–302. *Tasmanoonops drimus*, new species. 298. Tarsal organ from leg I. 299. Proprioreceptor bristle. 300–302. Male palp.

ETYMOLOGY: The specific name is an arbitrary combination of letters.

DIAGNOSIS: The species can be separated from all others known by the unique form of the tarsal organ (which is closest to that of *T. pinus*) and by the distinctive palpal bulb of the male.

MALE: Total length 2.10. Carapace 1.02 long, 0.79 wide. Abdomen 1.14 long, 0.61 wide. Eye sizes and grouping typical. Leg spination: tibiae: III p0-1-1, v0-1-2; IV p0-1-1, v0-1-2, r0-0-1; metatarsus III p0-1-0, v0-1-2. Tarsal organ long, tapering spine, wider at base than adjacent hairs (fig. 298); three or four lateral denticulations grouped near middle of length; proprioreceptor bristles stout, with numerous lateral denticulations (fig. 299). Claws typical.

	I	II	III	IV	Palp
Femur	0.80	0.76	0.64	0.88	0.28
Patella	0.32	0.28	0.20	0.40	0.20
Tibia	0.64	0.64	0.52	0.72	0.20
Metatarsus	0.60	0.60	0.52	0.80	–
Tarsus	0.28	0.28	0.21	0.36	0.28
Total	2.64	2.56	2.09	3.16	0.96



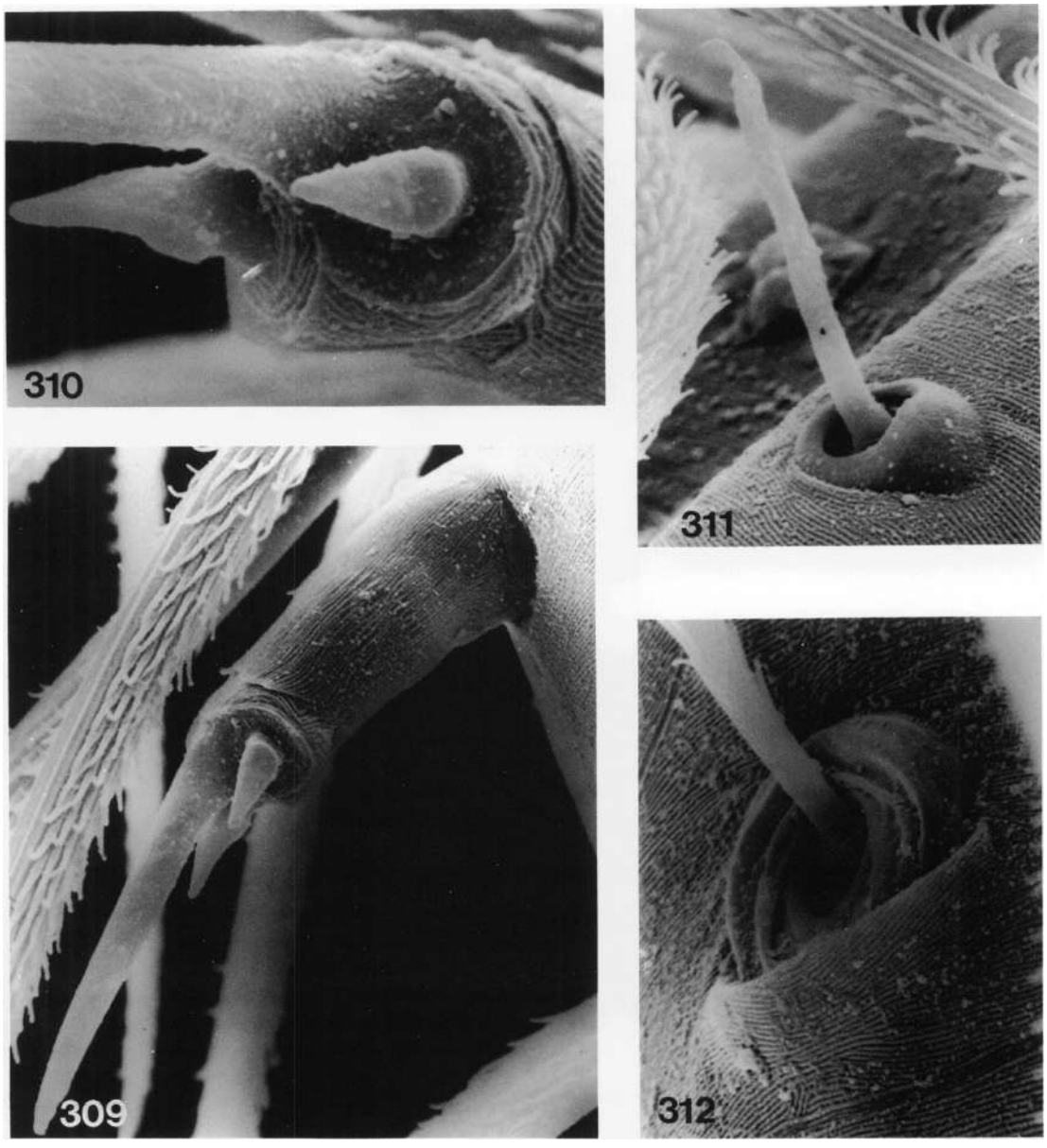
FIGS. 303–308. *Tasmanoonops pinus*, new species. 303, 304. Tarsal organ from leg I. 305. Proprioreceptor bristle. 306–308. Male palp.

Palpal bulb relatively simple, with only two distal processes (figs. 300–302); spermophore duct opens from distally expanded plate associated with horn-shaped process near base; few minute teeth present on lateral surface of distal extension, similar to those of *T. pinus*.

FEMALE: As in male, except for the following. Total length 2.51. Carapace 1.08 long, 0.80 wide. Abdomen 1.52 long, 0.84 wide. Anterior spinnerets with denticles.

	I	II	III	IV	Palp
Femur	0.80	0.76	0.68	0.88	0.28
Patella	0.40	0.36	0.28	0.32	0.12
Tibia	0.64	0.61	0.41	0.76	0.16
Metatarsus	0.60	0.52	0.52	0.80	—
Tarsus	0.32	0.24	0.24	0.33	0.36
Total	2.76	2.49	2.13	3.09	0.92

Internal genitalia (figs. 165, 272) relatively simple, with large, median receptaculum in



FIGS. 309–312. *Tasmanoonops trispinus,* new species. 309, 310. Tarsal organ from leg I. 311. Proprioreceptor bristle. 312. Trichobothrium.

form of obovate distal sac indented medially, leading into base of median rod through short duct.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Victoria, Australia.

DISCUSSION: The extraordinary tarsal organ found in this species and similarly in *T. pinus* separates them from all other *Tasmanoonops* recorded to date, and could warrant their generic separation. However, if the tarsal organ is given such weight, it will be necessary to separate out a number of other species groups with equally distinctive or-

gans. We have found insufficient congruence with other characters to warrant such a step.

Tasmanoonops pinus, new species
Figures 166, 271, 303–308

TYPES: Male holotype and female paratype taken in carrion traps in a *Nothofagus* forest at an elevation of 1000 m at Burraga Trail, Barrington Tops, Mount Allyn, New South Wales, Australia (June 17–July 16, 1978; S. and J. Peck), deposited in QMB.

ETYMOLOGY: The specific name is an arbitrary combination of letters.

DIAGNOSIS: This species is closely related to *T. drimus*, from which it can be readily separated by the form of the tarsal organ and the genitalia.

MALE: Total length 3.08. Carapace 1.36 long, 0.96 wide. Abdomen 1.68 long, 1.20 wide. Eye sizes and grouping typical. Leg spination: femora: III, IV p0-0-1; tibiae III, IV p1-1-1, v1-1-2, r1-1-0; metatarsi: III p1-1-1, v1-1-0, r1-1-0; IV p1-1-1, v1-1-2, r1-1-1. Tarsal organ long, slender (but stouter than adjacent hairs), thickly clothed with prominent lateral projections (fig. 303); distal portion smooth, slender, apically sharp (fig. 304); proprioreceptor bristles slender, only weakly denticulate with three or four small denticles (fig. 305). Lateral flanges of claws well developed, with 10 or 11 short teeth along margin.

	I	II	III	IV	Palp
Femur	1.36	1.28	1.20	1.53	0.40
Patella	0.56	0.55	0.48	0.58	0.16
Tibia	1.28	1.04	0.88	1.36	0.24
Metatarsus	1.20	1.12	0.96	1.36	—
Tarsus	0.48	0.48	0.46	0.56	0.40
Total	4.88	4.47	3.98	5.39	1.20

Palpal bulb (figs. 306–308) with distal portion similar to that of *T. drimus* but embolic process more complex, proximal spinous process small; minute denticles present on prolateral surface as in *T. drimus* but much more numerous.

FEMALE: As in male, except for the following. Total length 4.44. Carapace 1.62 long, 1.12 wide. Abdomen 2.84 long, 1.60 wide. Anterior spinnerets with denticles.

	I	II	III	IV	Palp
Femur	1.28	1.28	1.19	1.36	0.40
Patella	0.48	0.47	0.45	0.56	0.40
Tibia	1.36	1.28	0.88	1.44	0.32
Metatarsus	1.20	1.20	0.96	1.62	—
Tarsus	0.56	0.48	0.40	0.51	0.49
Total	4.88	4.71	3.88	5.49	1.61

Internal genitalia with single median receptaculum as in *T. drimus*, but receptaculum smaller, not indented (figs. 166, 271).

OTHER MATERIAL EXAMINED: Four males and two females taken with the types (AMNH).

DISTRIBUTION: Known only from New South Wales, Australia.

Tasmanoonops trispinus, new species
Figures 167, 309–312

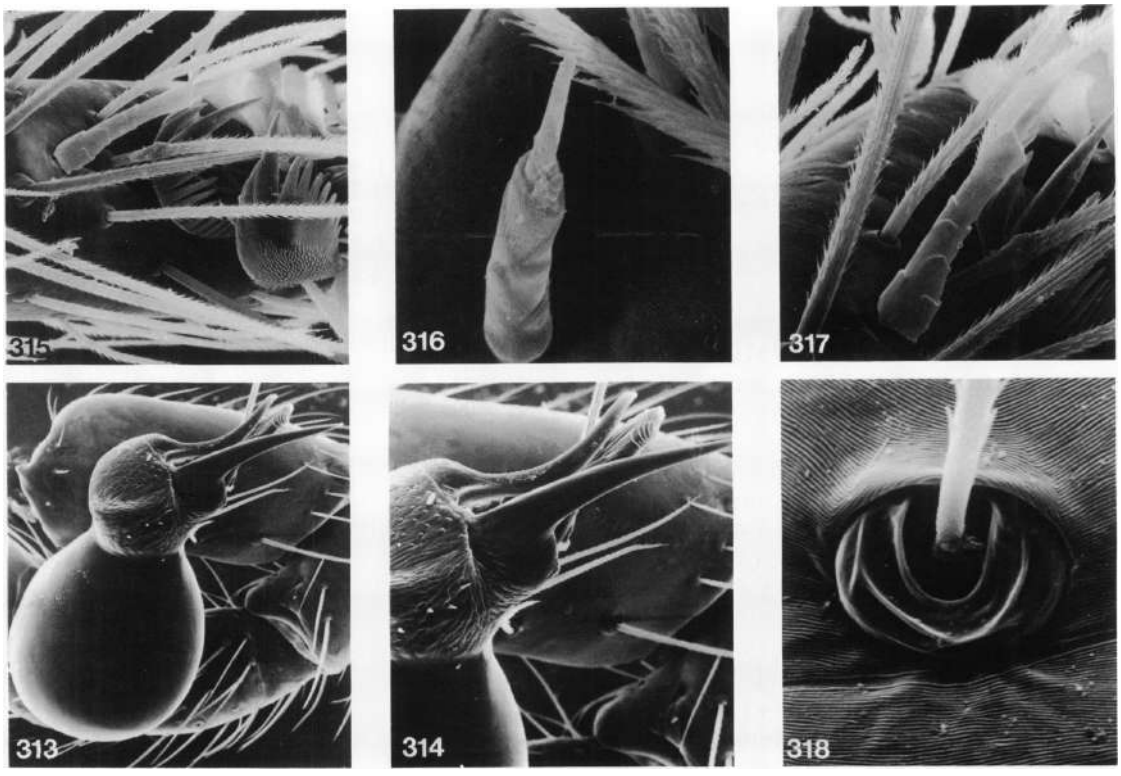
TYPE: Female holotype from a Berlese sample of litter taken in a *Nothofagus* forest at an elevation of 800 m at Rufus Canal, 13.5 km west-northwest of Derwent Bridge, Tasmania (January 26–28, 1980; A. Newton and M. Thayer), deposited in QMB.

ETYMOLOGY: The specific name refers to the three receptor spines on the tarsal organ.

DIAGNOSIS: This species is closely related to *T. mysticus* but can be separated by the different form of the female internal genitalia and the detailed structure of the tarsal organ, as well as by the absence of denticles on the anterior spinnerets of females.

MALE: Unknown.

FEMALE: Total length 3.10. Carapace 1.44 long, 1.12 wide. Abdomen 1.84 long, 1.28 wide. Eye sizes and grouping typical. Anterior spinnerets without denticles. Leg spination: tibiae: III p1-1-0, v1-1-2, r1-1-0; IV p0-1-1, v1-1-2, r1-1-0; metatarsi: III p1-1-1, v1-1-2, r1-0-1; IV p1-1-1, v1-1-2, r1-1-1. Tarsal organ consisting of stout, erect cylinder twice as high as wide at base, continued on posterior margin by spinous process of equal length; distal spine flanked by two distinct conical receptor lobes (figs. 309, 310); proprioreceptor bristles slender, with few lateral projections (fig. 311). Claws typical.



FIGS. 313–318. *Tasmanoonops mysticus*, new species. 313, 314. Male palp. 315. Tarsus I, showing claws and tarsal organ. 316, 317. Tarsal organ. 318. Trichobothrium.

	I	II	III	IV	Palp
Femur	1.28	1.20	1.04	1.44	0.48
Patella	0.40	0.40	0.38	0.48	0.16
Tibia	1.04	1.04	0.96	1.36	0.32
Metatarsus	1.12	1.04	0.96	1.36	–
Tarsus	0.48	0.48	0.40	0.48	0.48
Total	4.32	4.16	3.74	5.12	1.44

Internal genitalia (fig. 167) very different from that of *T. mysticus* but with some characters in common not found in other species; large secretory mass associated with posterior plate of genitalia before passing back into posterior sac; secretory cells open into lumen through numerous small pores grouped on irregular plates which cover entire posterior surface; single spherical receptaculum at each side of plate as in *T. mysticus* but also several further smaller receptacula seem to have developed from secretory plates; in both species posterior sac typically thin, membranous, with invaginated secretory lobes; short T-shaped receptaculum associated with anterior spine in *T. trispinus*, whereas in *T. mysticus* secretory gland appears to open directly into lumen of spine.

OTHER MATERIAL EXAMINED: None.

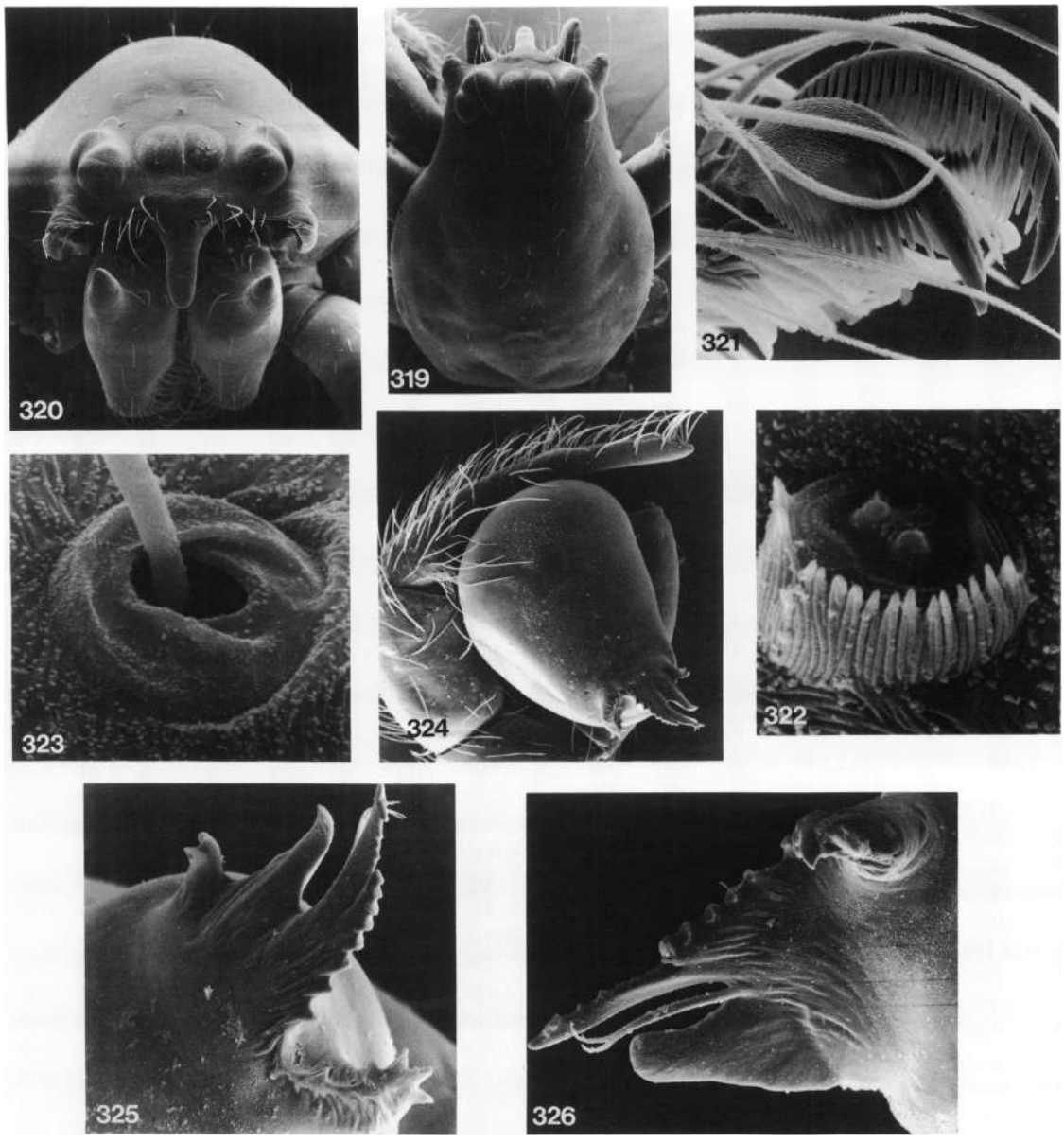
DISTRIBUTION: Known only from Tasmania.

Tasmanoonops mysticus, new species
Figures 211, 218, 313–318

TYPES: Male holotype and female paratype taken at rainforest site 52, Terania Creek, north of Lismore, northern New South Wales, Australia (March 28, 1976; M. R. Gray), deposited in AMS.

ETYMOLOGY: The specific name refers to the mysterious relationships of the species.

DIAGNOSIS: This species can be separated from all others except *T. trispinus* by the absence of a separate anterior receptaculum and by the numerous receptacula associated with the posterior secretory gland at the base of the posterior sac. It can be separated from



FIGS. 319–326. *Cornifalx insignis* Hickman. 319, 320. Dorsal and anterior views of carapace of male, showing the three lobes on the anterior margin of the carapace and the large lobes on the anterior surface of the chelicerae. 321. Claws of leg I. 322. Tarsal organ. 323. Trichobothrium. 324–326. Male palp.

that species by the characters mentioned above.

MALE: Total length 2.38. Carapace 1.16 long, 0.90 wide. Abdomen 1.22 long, 0.80 wide. Eyes equal in width; PLE separated by twice their diameter. Leg spination: tibia III v1-2-1; metatarsus III d1-0-0, p1-0-1, v1-0-2, r0-1-0. Tarsal organ long, slender, not much stouter than adjacent hairs, surmounted by stout distal receptor spine; second short receptor lobe present at base of spine; no cuticular lobes but lateral surface of organ with

large scales probably representing reduced lobes (figs. 315–317). Claws typical, with strongly developed lateral flanges (fig. 315).

	I	II	III	IV	Palp
Femur	0.83	0.80	0.62	0.97	0.30
Patella	0.40	0.37	0.31	0.56	0.13
Tibia	0.66	0.62	0.43	0.83	0.49
Metatarsus	0.64	0.65	0.55	0.84	—
Tarsus	0.27	0.28	0.25	0.31	0.25
Total	2.80	2.72	2.16	3.51	1.17

Palpal bulb twice as long as wide, distal portion strongly constricted, covered with fine scales and few spines (figs. 313, 314); embolus tubular, flanked by one clavate and one massive spinous apophysis.

FEMALE: As in male, except for the following. Total length 2.60. Carapace 1.22 long, 0.90 wide. Abdomen 1.45 long, 0.82 wide. Anterior spinnerets with denticles.

	I	II	III	IV	Palp
Femur	0.80	0.76	0.72	0.95	0.25
Patella	0.42	0.40	0.30	0.42	0.15
Tibia	0.68	0.65	0.48	0.78	0.23
Metatarsus	0.70	0.68	0.55	0.89	—
Tarsus	0.37	0.30	0.30	0.35	0.40
Total	2.97	2.79	2.35	3.39	1.03

Genitalia with seven pyriform receptacula grouped at base of posterior plate, outer pair largest (figs. 211, 218); posterior receptaculum large, narrowing where it enters bursa.

OTHER MATERIAL EXAMINED: One male taken from a log at the type locality (April–May 1976; M. R. Gray; AMS).

DISTRIBUTION: Known only from northern New South Wales, Australia.

DISCUSSION: This species stands apart from all others except *T. trispinus* both in genitalic characters and the form of the tarsal organ. The combination of an elongate tarsal organ surmounted by a long receptor spine also occurs in the two South American genera *Chileolobus* and *Osornolobus*, but the lack of congruence in other characters suggests that this resemblance is due to parallel modifications of the tarsal organ.

CORNIFALX HICKMAN

Figures 319–326

Cornifalx Hickman, 1979, p. 54 (type species by original designation *Cornifalx insignis* Hickman).

DIAGNOSIS: *Cornifalx* can be separated from all other orsolobid genera by the horns on the anterior and lateral margins of the carapace of the male. It can also be distinguished from *Tasmanoonops* and *Hickmanolobus* by the dorsal chevron pattern on the abdomen, and from *Tasmanoonops* in particular by having two teeth on each margin of the cheliceral furrow.

DESCRIPTION: Relatively large orsolobids (total length 4.6–5.7) with carapace light brown, abdomen with black pattern forming chevrons on posterior half of dorsum. Anterior margin of male carapace with median horn, lateral angles each with rounded lobe (figs. 319, 320). Chelicerae with two teeth on each margin, males with anterior apophysis. Sternum shield-shaped, rebordered, with extensions to and between coxae. Colulus with numerous hairs; anterior spinnerets of female without denticles. Female genitalia unknown. Spines present on tibiae and metatarsi III and IV. Claws with teeth of outer row restricted to lateral flanges (fig. 321). Tarsal organ low, with only short receptor nodes (fig. 322); trichobothrial base with hood slightly depressed (fig. 323). Palpal claw of female smooth. Male palp robust, bulb pyriform, with short tubular embolus and accessory processes (figs. 324–326). Respiratory system as in *Tasmanoonops*.

INCLUDED SPECIES: Only the type species.

DISTRIBUTION: Known only from Tasmania.

DISCUSSION: *Cornifalx* is closely related to *Tasmanoonops* despite the striking modifications of the carapace in males. The two other characters by which it can be separated (namely the 2 + 2 cheliceral tooth formula and the abdominal chevron pigmentation pattern) are both probably plesiomorphic for the Orsolobidae.

The simple, pyriform male palpal bulb is found in *Tasmanoonops*, as is the tubular embolus. The palpal accessory processes, however, are different from those of any species of *Tasmanoonops* we have examined, particularly the slender bifid process (which may, however, be represented to some extent in *T. fulvus*, also described from Tasmania). This latter species does not exhibit the male carapace or cheliceral modifications, and has a 1 + 1 cheliceral tooth formula.

Although most species of *Tasmanoonops* have the peculiar grouping of denticles on the basal segment of the anterior spinnerets of females, there are some in which these denticles are lacking, so their absence in *Cornifalx* is not decisive.

The female genitalia have not been examined, but the external features recorded by Hickman suggest that the general form is similar to *Tasmanoonops,* with a heavily sclerotized anterior structure and a large posterior receptaculum.

It may eventually be shown that the only known species, *C. insignis,* is just an aberrant species of *Tasmanoonops* and should be transferred to that genus, but we have left this decision open until the Australian fauna becomes better known. *Dugdalea oculata* from New Zealand has similar lobes associated with the lateral eyes, but does not appear to be closely related to *C. insignis.*

HICKMANOLOBUS, NEW GENUS
Figures 244, 327–332

TYPE SPECIES: *Oonopinus mollipes* Hickman (1932).

ETYMOLOGY: The generic name is in honor of Dr. V. V. Hickman of Hobart, Tasmania, and is masculine in gender.

DIAGNOSIS: The uniform pigmentation of the abdominal dorsum separates this genus from all other Australian orsolobids. It can be distinguished from the Chilean genus *Mallecolobus* by the absence of leg spines and from the New Zealand genus *Pounamuella* by the different form of male palpal bulb and the lack of a long receptor spine on the tarsal organ.

DESCRIPTION: Small orsolobids (total length 2.0–3.0) with abdominal dorsum evenly pigmented (except for pale patch posteriorly). Chelicerae with two teeth on each margin. Sternum broadly oval, rebordered, truncated posteriorly. Colulus reduced. Female genitalia with large posterior receptaculum (fig. 244), pores limited to bifurcate plate adjacent to opening; anterior receptaculum in form of slender duct terminating in convoluted lobe. Legs without spines. Claws evenly, strongly pectinate on both margins but without lateral flanges (fig. 327); tufts of spatulate hairs present. Tarsal organ low, with three small receptor nodes and few cuticular lobes (figs. 329, 330); trichobothrial base with hood reduced to narrow ridge (fig. 328). Palpal claw of female smooth. Male bulb squat, with curved distal embolus associated with secondary lobe (figs. 331, 332). Respiratory system as in *Tasmanoonops.*

INCLUDED SPECIES: Only the type species; the original description, based on females, has been supplemented by a description of the male (Hickman, 1979, p. 57).

DISTRIBUTION: Known only from Australia (see below).

DISCUSSION: Hickman, when describing the Tasmanian type species, placed it in the oonopid genus *Oonopinus,* probably on the basis of the abdominal pigmentation. Although only a single species has been described, we have seen a further species from Queensland and the genus is probably widespread in Australian rainforest.

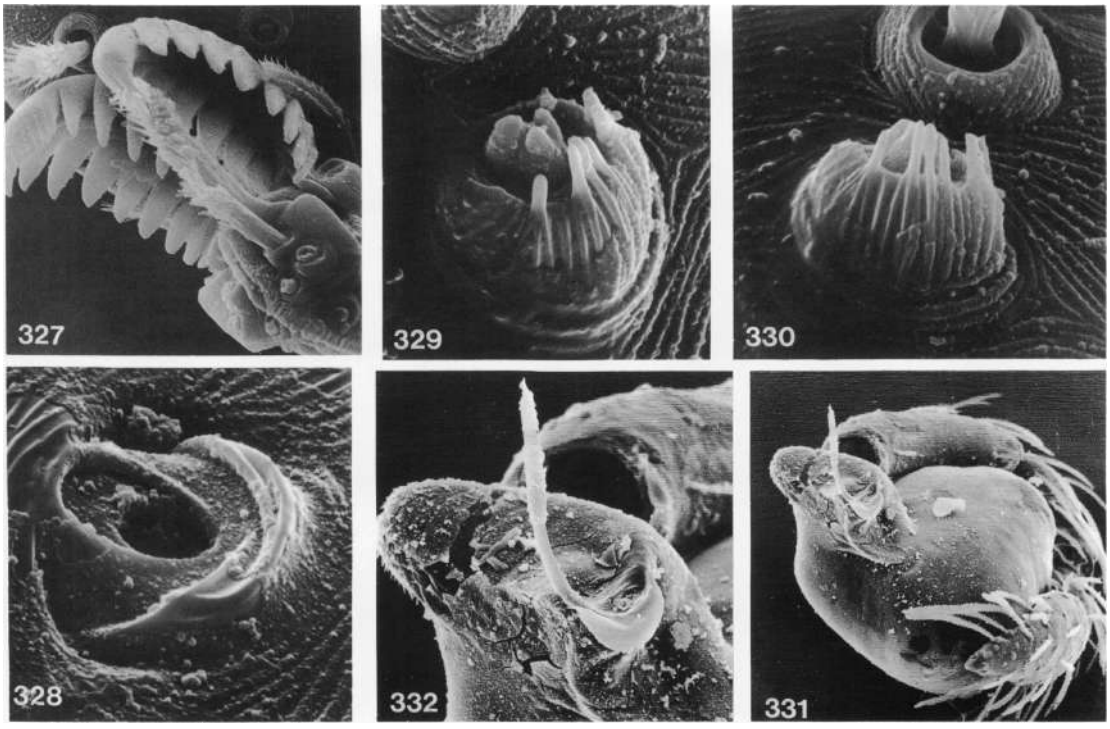
AUSTRALOBUS, NEW GENUS

TYPE SPECIES: *Australobus torbay,* new species.

ETYMOLOGY: The generic name refers to the Australian distribution and is masculine in gender.

DIAGNOSIS: *Australobus* can be separated from *Tasmanoonops* by the pigmented abdomen and from *Cornifalx* and *Hickmanolobus* by the spiniform tarsal organ, the form of the male palp, and the presence of spines on all legs.

DESCRIPTION: Small orsolobids (total length under 2.0) with dorsum of abdomen heavily pigmented in chevron pattern. Chelicerae with one tooth on each margin. Sternum scutiform, slightly longer than wide. Colulus with few hairs. Female genitalia unknown. Tibiae and metatarsi of all legs with spines. Claws with typical lateral flange, strongly dentate, with no teeth beyond flange; only few spatulate hairs below claws, clavate in form, without slender stalk usual in *Tasmanoonops,* accompanied by more numerous filiform hairs (fig. 336). Tarsal organ low, without lateral cuticular projections, with very long median receptor spine and two shorter lateral receptor lobes; proprioreceptor bristles smooth but forked distally. Male palp with distinctive transverse distal process. Posterior spiracles



FIGS. 327–332. *Hickmanolobus mollipes* (Hickman). 327. Claws of leg I. 328. Trichobothrium. 329, 330. Tarsal organ. 331, 332. Male palp.

near epigastric furrow, tracheal trunks not connected.

Australobus torbay, new species
Figures 195–197, 333–336

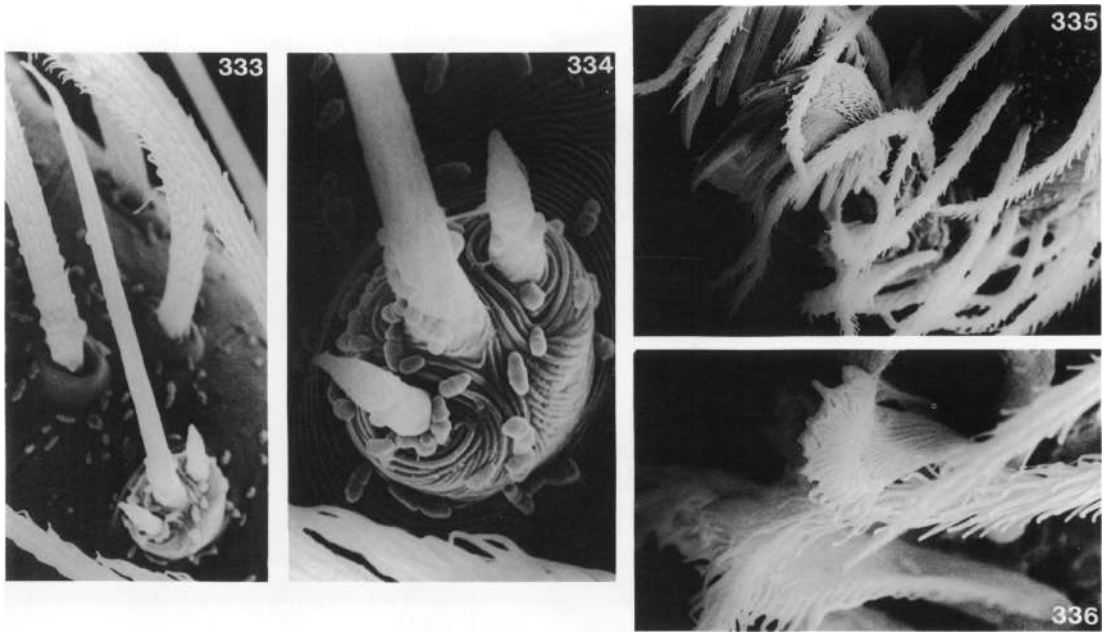
TYPE: Male holotype taken in a pitfall trap at Twilight Hill, Torbay Head, west of Albany, Western Australia (November 19–December 2, 1982; B. Y. Main), deposited in WAM.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species, the only one known in the genus, is notable for the unusual form of the processes of the male palpal bulb and for the striking tarsal organ. Although the single specimen available dried before preservation, there are traces of pigment behind the eyes which suggest that there are some carapace markings in life. The pigment has remained on the cuticle of the abdomen, heavily so in the dorsal area. There are pale patches on each anterodorsal surface; posteriorly, the pigment is distributed in broad chevrons with only narrow paler areas separating them. The lateral surfaces are lightly pigmented but the ventral surface is pale except for two small patches in front of the spinnerets.

MALE: Total length 1.84. Carapace 0.96 long, 0.72 wide. Abdomen 0.88 long, 0.56 wide. Eyes equal in width, with posterior medians situated between level of anterior and posterior laterals. Leg spination: tibiae: I, II v1-1-0; III v0-1-2, r1-1-0; IV v0-1-2, r1-1-1; metatarsi: I, II v1-0-0; III, IV v0-1-2, r1-1-0. Tarsal organ with long median receptor spine flanked by two smaller, distally pointed receptor lobes (figs. 333, 334). Claws with 12 teeth on prominent lateral flange (fig. 335).

	I	II	III	IV	Palp
Femur	0.79	0.68	0.56	0.80	0.21
Patella	0.32	0.24	0.20	0.41	0.15
Tibia	0.68	0.64	0.48	0.68	0.12
Metatarsus	0.56	0.52	0.44	0.68	—
Tarsus	0.28	0.28	0.28	0.36	0.21
Total	2.63	2.36	1.96	2.93	0.69



FIGS. 333–336. *Australobus torbay*, new species. 333, 334. Tarsal organ. 335. Claws. 336. Spatulate and filiform hairs below claws.

Palpal segments stout; bulb with distinctive processes (figs. 195–197).

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Western Australia.

THE NEW ZEALAND FAUNA

Previous studies of the New Zealand fauna (Forster, 1955, 1956, 1964) recorded 32 species placed in four genera (along with one true oonopid genus, *Kapitia*). Our present study increases the number of species to 106 and 12 new genera are established. Nevertheless, the collections available for study are patchy in distribution and the full fauna will no doubt greatly exceed this number.

Orsolobids have been more extensively collected in New Zealand than in either Australia or South America, and this factor undoubtedly accounts to some extent for the apparent greater diversity of the New Zealand fauna. It does seem, however, that the New Zealand environment has been more suitable over time than the other two land masses for the persistence and diversification of this segment of the Gondwanaland fauna.

ASCUTA FORSTER

Ascuta Forster, 1956, p. 101 (type species by original designation *Ascuta media* Forster).

DIAGNOSIS: *Ascuta* can be separated from all other New Zealand genera having a chevron pattern on the abdomen by the presence of a T-shaped anterior receptaculum in the female genitalia, and from *Waipoua* by the different form of the abdominal patterning.

DESCRIPTION: Medium size to large orsolobids (total length 1.9–4.2) with distinctive pattern of clearly separated median chevrons on dorsum of abdomen, without scuta; carapace smooth, with few hairs, usually with definite pattern between eyes and midsurface, but pattern reduced or absent in some species. Eyes equal in size; PME set slightly back from ALE. Chelicerae with two teeth on each margin. Sternum scutiform, slightly longer than wide. Colulus small with three or five hairs. Female genitalia with T-shaped anterior receptaculum associated with prominent transverse muscle plates; posterior receptaculum relatively small sac enclosed in large secretory mass discharging into lumen through simple pores. Spines limited to tibiae (p0-0-

1, v0-0-2, r0-0-1) and metatarsi (p0-0-2, v0-0-2, r0-0-2) III and IV. Claws strongly pectinate on each margin; teeth on outer margin restricted to lateral flange in both sexes; spatulate hairs present below claws. Tarsal organ low, usually with fringe of cuticular lobes and three or four receptor lobes, one always distinctly longer; bothria smooth or slightly ridged; proprioreceptor bristles smooth but branched distally (fig. 363). Male palp with bulb usually pyriform, embolus sometimes modified distally or bearing a subdistal spine. Posterior spiracles opening close behind furrow; tracheal trunks not joined.

DISTRIBUTION: Recorded from both the North and South Islands but more numerous on the South Island; not recorded from Stewart Island, Three Kings Islands, Chatham Islands, or any of the subantarctic islands. The lack of records from Stewart Island could be due to inadequate collecting, but the absence of the genus from the other islands is probably real as they have now been thoroughly collected.

DISCUSSION: The structure of the female genitalia would suggest a close relationship with the species we have placed in the new genus *Waipoua*. The main character we use to separate that genus from *Ascuta* is the form of abdominal pigmentation. The uniform pigmentation of *Waipoua* is distinct in itself; in addition, the restriction of the teeth to the outer flange of the claws also appears to be a constant character for *Ascuta*, whereas in *Waipoua* there are further teeth (at least two) on the outer margin beyond the flange. Also associated with these extra teeth is sexual dimorphism in the claws of the first two pairs of legs in some species; such dimorphism is not found at all in *Ascuta*.

When *Ascuta* was first established in 1956, all of the ascutate chevroned species known from New Zealand were included in the genus. Of the 16 species described at that time, we retain only three, but a further 10 new species are described below. As in many haplogyne spiders, the uniformity of the external characters, along with the tendency for the male bulb to take the form of a simple pyriform organ, provided few clues to generic diversity. In recent years, however, the routine examination of the female internal genitalia has shed new light on this problem, and increasing reliance has been placed on those organs for the separation of these and other genera.

The tarsal organ is remarkably stable in some groups of species within the genus, varying mainly in the number of receptor lobes. Invariably, one of the receptor lobes is distinctly longer than the others; in some species it is much longer. In a number of other genera, such as *Wiltonia* and *Subantarctia*, this differentiation does not occur and all the receptor lobes are small.

Ascuta media Forster

Figures 7, 337–341, 348, 879, 880, 887

Ascuta media Forster, 1956, p. 101, figs. 21–26 (male holotype from Lake Te Au, near Lake Te Anau, Fiordland, South Island, New Zealand, in CMA, examined).

NOTE: The original description is full and need not be repeated, but the structure of the tarsal organ, bothrium, and female genitalia can now be described. The base of the tarsal organ is as high as wide, with three receptor spines (figs. 339, 340); the anterior spine is long, almost half the length of adjacent hairs, whereas the other two are short and spiniform; there are few marginal lobes. The bothrium is ridged (fig. 341). The female genitalia are distinctive (figs. 337, 348); the posterior receptaculum is a small, oval sac closely covered with pores which are not evenly spaced but aggregated in groups of from two to seven. The male palpal bulb is simple (fig. 338).

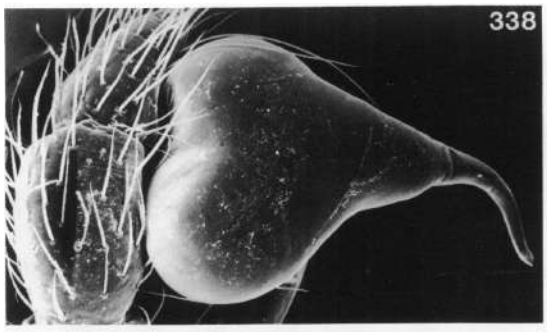
DISTRIBUTION: The species was originally recorded from Lake Te Au, Cascade Creek, and Martins Bay in the northern reaches of Fiordland, South Island. No further extensions of the range have been recorded. All specimens collected have been found in moss from the forest floor or on tree trunks in *Nothofagus* forests.

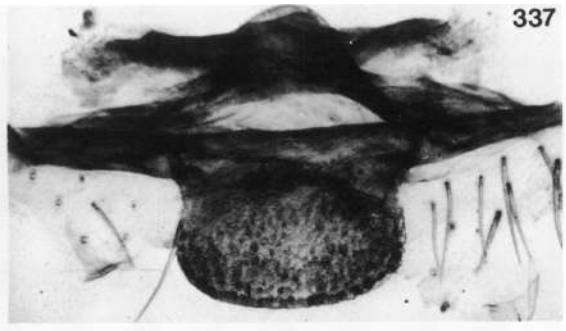
Ascuta univa, new species

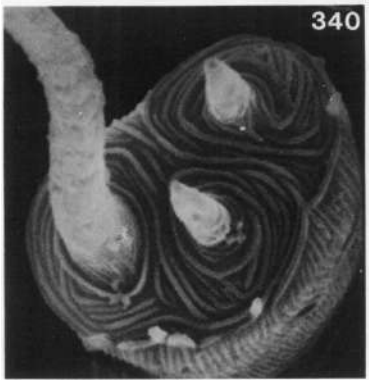
Figures 342–347, 350, 359

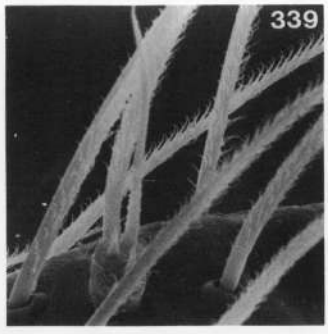
TYPES: Male holotype and female paratype from moss on *Nothofagus* forest floor at Riordans Bridge, Lewis Pass, South Island, New Zealand (April 25, 1977; R. R. Forster), deposited in OMD.

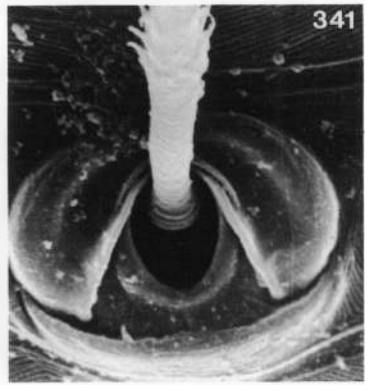
ETYMOLOGY: The specific name is an arbitrary combination of letters.











FIGS. 337–341. *Ascuta media* Forster. 337. Female genitalia. 338. Male palp. 339. Tarsal organ. 340. Tarsal organ from above. 341. Bothrium.

DIAGNOSIS: This species appears closely related to *A. tongariro* from central North Island but can be readily separated by the form of the female genitalia and the presence of four sensory lobes surrounding the long median spine of the tarsal organ.

FEMALE: Total length 2.44. Carapace 1.04 long, 0.81 wide. Abdomen 1.36 long, 0.72 wide. Carapace and abdomen with dorsal pattern (fig. 359); abdominal venter with paired dark patches near posterior spinnerets and at base of spinnerets; sternum with median band. Tarsal organ with long median spine encircled by four short spiniform lobes; marginal lobes few (figs. 345, 346). Claws with prominent outer flange (fig. 347) bearing 10 or 11 marginal teeth.

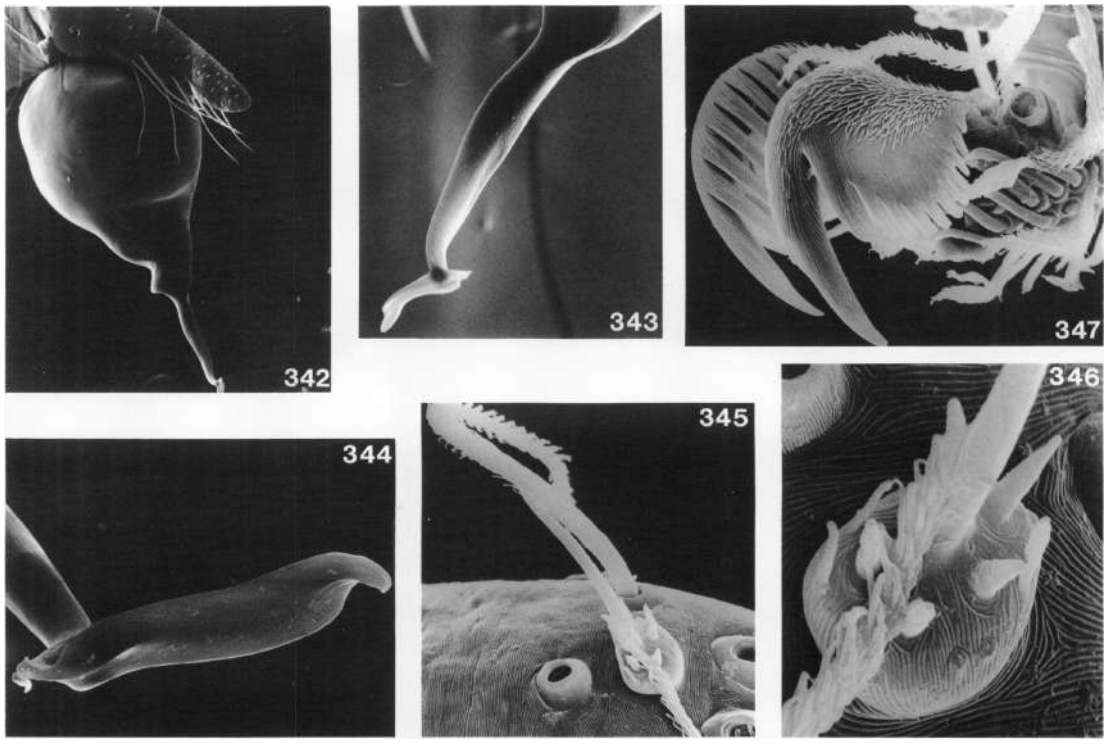
	I	II	III	IV	Palp
Femur	0.84	0.81	0.72	0.96	0.32
Patella	0.44	0.41	0.28	0.44	0.20
Tibia	0.64	0.60	0.60	0.73	0.24
Metatarsus	0.60	0.57	0.55	0.77	—
Tarsus	0.36	0.35	0.31	0.36	0.37
Total	2.88	2.74	2.46	3.26	1.13

Genitalia with prominent anterior receptaculum; transverse lobe irregular, with stout trunk leading into bursa; muscle plate with large anterior flap; posterior receptaculum reduced to narrow median lobe with secretory pores limited to round plate (fig. 350).

MALE: Total length 2.72. Carapace 1.20 long, 0.93 wide. Abdomen 1.49 long, 0.84 wide. Patterning as in female. Tarsal organ similar but lateral plate of claws not as strongly developed.

	I	II	III	IV	Palp
Femur	1.32	1.32	1.09	1.52	0.60
Patella	0.44	0.44	0.41	0.44	0.29
Tibia	1.20	1.12	0.83	1.24	0.32
Metatarsus	1.08	1.07	0.96	1.28	—
Tarsus	0.55	0.52	0.44	0.56	0.44
Total	4.59	4.47	3.73	5.04	1.65

Palpal bulb simple but embolus terminated by short, transverse bar (figs. 342–344); sperm duct appears to open from base of distal process.



FIGS. 342–347. *Ascuta univa,* new species. 342–344. Male palp. 345, 346. Tarsal organ. 347. Claws, leg I, male.

OTHER MATERIAL EXAMINED: An immature female collected with the types (OMD).

DISTRIBUTION: Known only from the type locality on the South Island.

Ascuta tongariro, new species
Figures 349, 358, 360–363

TYPE: Female holotype from litter in *Nothofagus* forest near the Chateau on Mount Tongariro, North Island, New Zealand (December 20, 1948; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species seems closely related to *A. univa* but the two can be separated by differences in the female genitalia and tarsal organ.

FEMALE: Total length 3.56. Carapace 1.48 long, 1.05 wide. Abdomen 2.00 long, 3.30 wide. Abdomen with strong chevron pattern merging laterally to form strong longitudinal bands (fig. 358). Tarsal organ with four widely spaced cuticular lobes and two receptor lobes, one long, slender (figs. 361, 362). Claws as in figure 360.

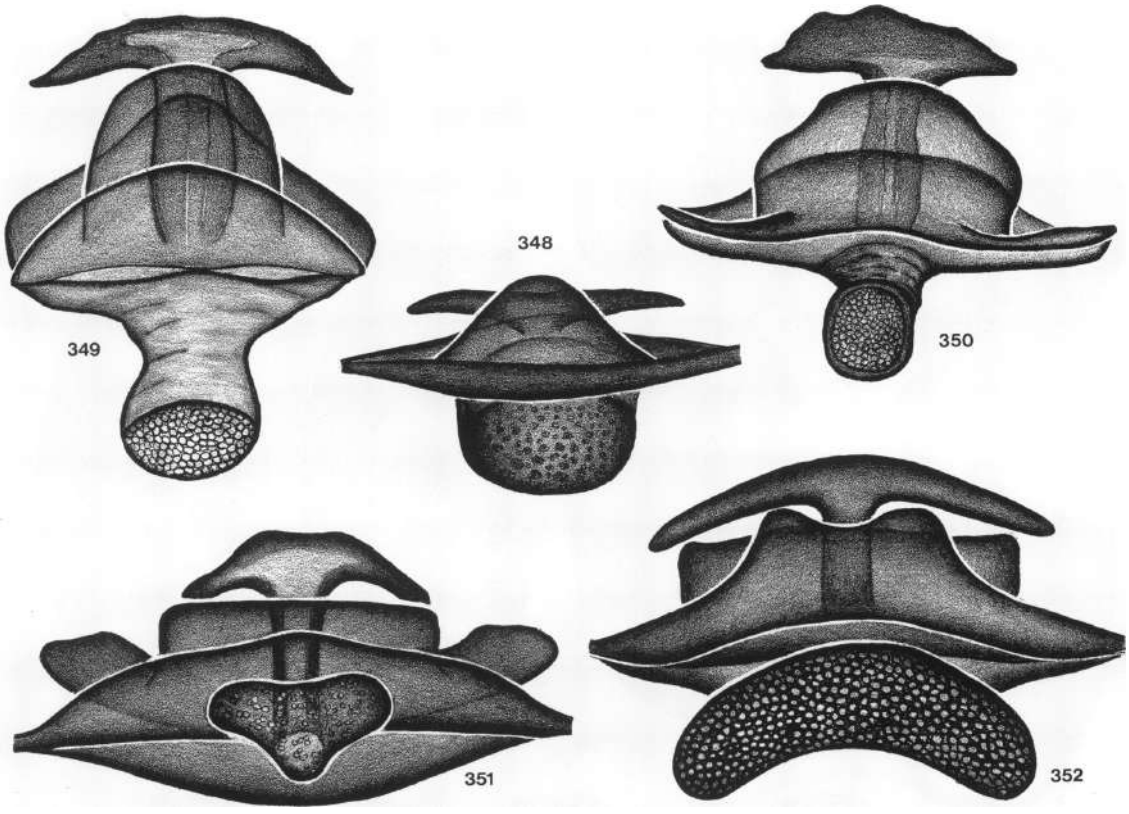
	I	II	III	IV	Palp
Femur	1.32	1.28	—	1.60	0.52
Patella	0.56	0.60	—	0.68	0.33
Tibia	1.16	1.08	—	1.28	0.40
Metatarsus	1.09	1.04	—	1.40	—
Tarsus	0.48	0.49	—	0.52	0.48
Total	4.61	4.49	—	5.48	1.73

Genitalia as in figure 349.

MALE: Unknown.

OTHER MATERIAL EXAMINED: One female taken under bark of *Nothofagus* logs at an elevation of 900 m at Rangipo Inlet, 36 km by road south of Turangi on April 6, 1980, by A. Newton and M. Thayer (AMHN).

DISTRIBUTION: Known only from the Central Plateau district of the North Island.



FIGS. 348–352. Female genitalia of *Ascuta*, from above. 348. *A. media* Forster. 349. *A. tongariro*, new species. 350. *A. univa*, new species. 351. *A. ornata* Forster. 352. *A. parornata*, new species.

Ascuta musca, new species
Figures 357, 369, 370, 378, 389

TYPES: Male holotype and female paratype sifted from moss from forest floor in a subalpine beech forest at an elevation of 670 m at Arthur's Pass, South Island, New Zealand (February 15, 1984; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name refers to the habitat from which the spiders were collected.

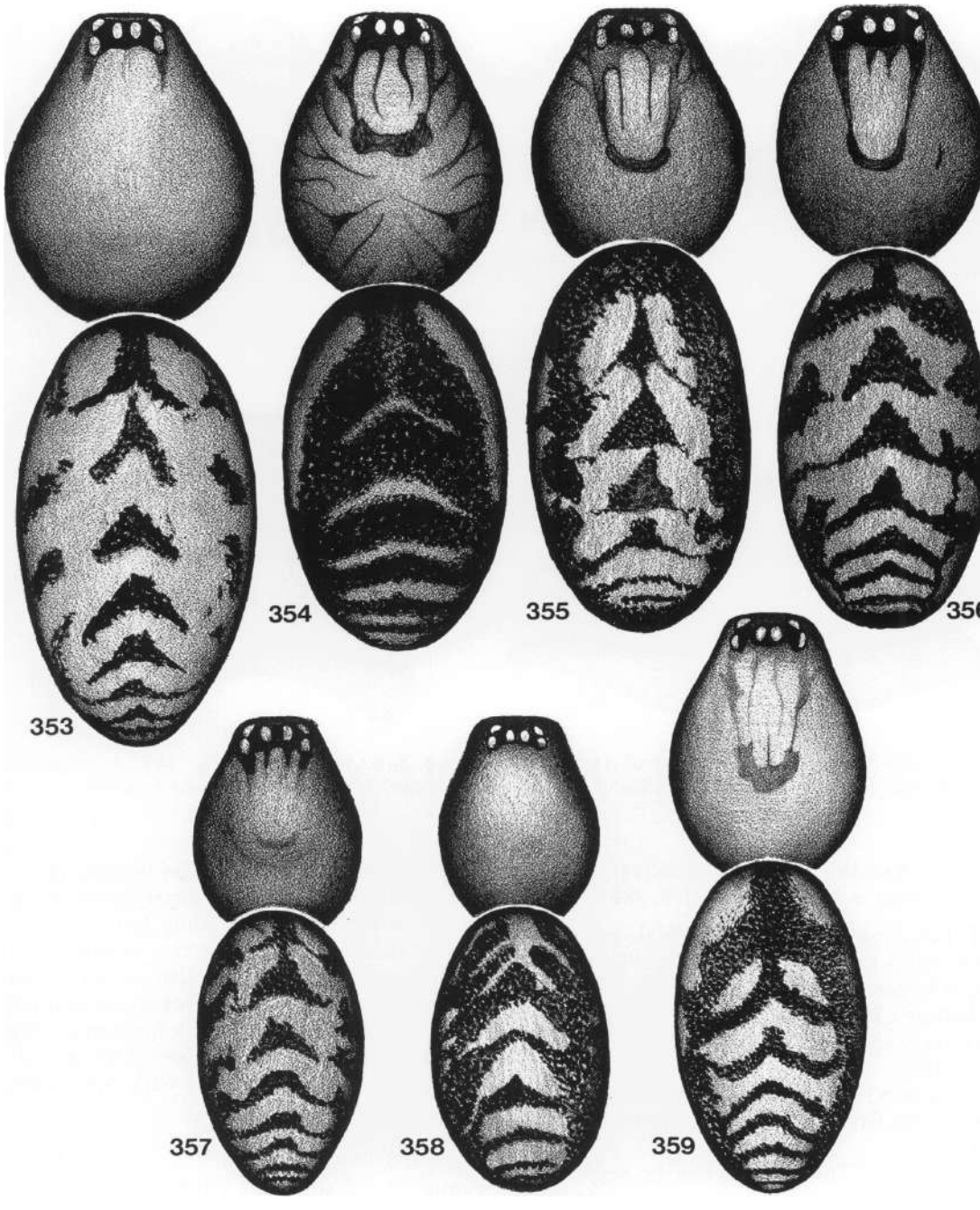
DIAGNOSIS: This species can be separated from all others by the form of the male and female genitalia.

MALE: Total length 2.05. Carapace 0.88 long, 0.64 wide. Abdomen 1.09 long, 0.72 wide. Carapace with only faint traces of pattern behind eyes, in some specimens extending back to dark patch about midway down carapace, lateral margins shaded; dorsum of abdomen with series of narrow median chevrons continued down lateral margin (fig. 357), venter with irregular shading between epigastric furrow and spinnerets; sternum not pigmented. Tarsal organ with six or seven marginal lobes and contiguous group of three short receptor lobes, of which median is only slightly longer (fig. 378). Claws with prominent outer flange furnished with nine teeth increasing in length distally.

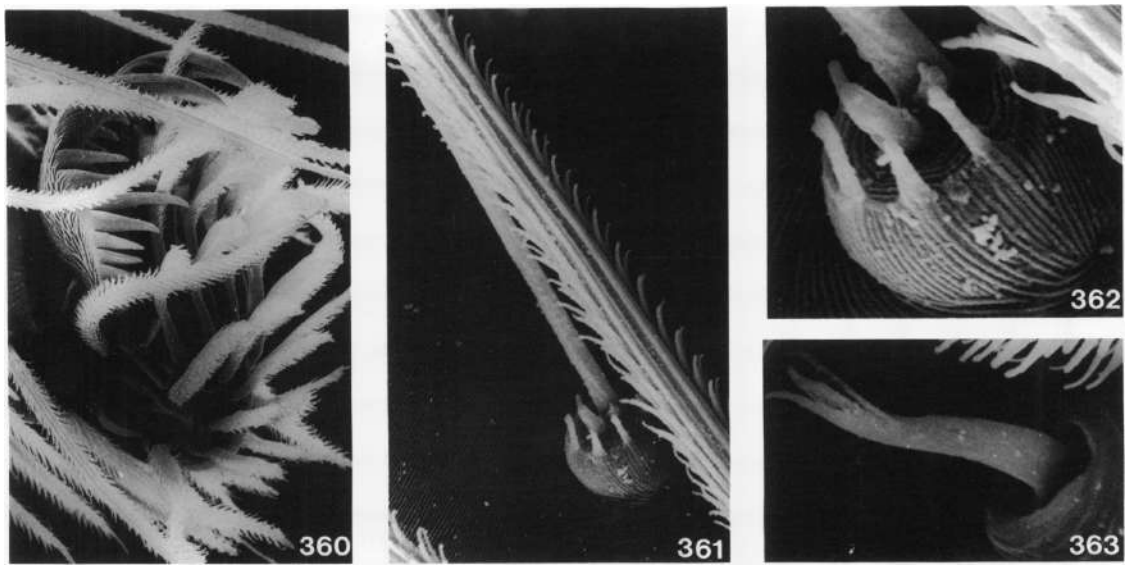
	I	II	III	IV	Palp
Femur	0.80	0.77	0.64	1.00	0.28
Patella	0.31	0.28	0.27	0.36	0.16
Tibia	0.56	0.56	0.44	0.73	0.16
Metatarsus	0.56	0.56	0.44	0.73	—
Tarsus	0.36	0.32	0.32	0.36	0.21
Total	2.59	2.49	2.11	3.18	0.81

Palp as in figures 369, 370.

FEMALE: Total length 2.41. Carapace 0.96



FIGS. 353–359. Dorsal view of carapace and abdomen of *Ascuta*. 353. *A. inopinata* Forster, male. 354. *A. insula,* new species, female. 355. *A. cantuaria,* new species, female. 356. *A. taupo,* new species, male. 357. *A. musca,* new species, female. 358. *A. tongariro,* new species, female. 359. *A. univa,* new species, female.



FIGS. 360–363. *Ascuta tongariro*, new species. 360. Leg I of female, showing claws and claw tuft. 361, 362. Tarsal organ. 363. Proprioreceptor bristle.

long, 0.80 wide. Abdomen 1.44 long, 0.89 wide. Somatic characters as in male.

	I	II	III	IV	Palp
Femur	0.84	0.84	0.71	1.00	0.28
Patella	0.36	0.36	0.29	0.36	0.12
Tibia	0.68	0.64	0.56	0.76	0.24
Metatarsus	0.64	0.64	0.61	0.80	–
Tarsus	0.32	0.31	0.25	0.31	0.31
Total	2.84	2.79	2.42	3.23	0.95

Internal genitalia (fig. 389) distinctive, with transverse bar of anterior receptaculum regular, distended mesially with large lumen, secretory glands apparently restricted to outer arms of receptaculum; posterior receptaculum transverse sac extending across full width of muscle plates, secretory gland opening into lumen through regularly spaced pores grouped on oval poreplate.

OTHER MATERIAL EXAMINED: Numerous specimens collected with the types (OMD), others collected from sooty mold, lichen, and moss on the trunks of *Nothofagus solandri* 8 km south of Arthur's Pass township on March 19–21, 1980, by A. Newton and M. Thayer (AMNH), and one male taken from moss in *N. solandri* forest at Riordans Bridge, Lewis Pass on April 25, 1977, by R. R. Forster (OMD).

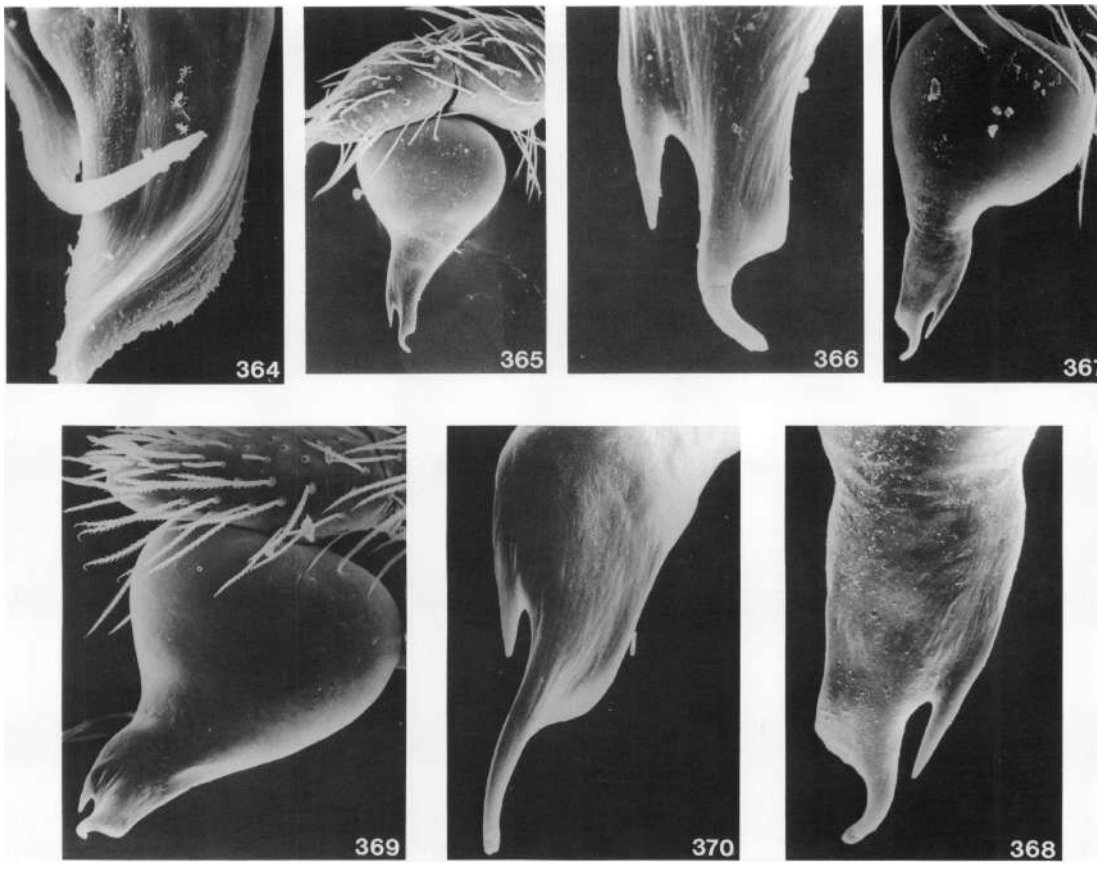
DISTRIBUTION: Apparently restricted to high-country beech forest along the southern portion of the Southern Alps. The species has not been found in the mixed lowland forest that extends along the western seaboard between these two localities. It has also not been found further south in the Fiordland region where beech forest is dominant.

Ascuta montana, new species
Figures 365, 366, 374, 385

TYPE: Male holotype collected by pyrethrum fogging of *Nothofagus menziesii* bark at an elevation of 860 m on the north slope of Mount Robert, Nelson Lakes National Park, South Island, New Zealand (March 23–26, 1980; A. Newton and M. Thayer), deposited in OMD.

ETYMOLOGY: The specific name refers to the montane distribution of the species.

DIAGNOSIS: This species appears closely related to *A. musca* and *A. atra* but can be separated from both by differences in the ab-



FIGS. 364–370. Male palp of *Ascuta*. 364. *A. inopinata* Forster. 365, 366. *A. montana*, new species. 367, 368. *A. taupo*, new species. 369, 370. *A. musca*, new species.

dominal pattern and the shape of the distal portion of the embolus of the male palp.

MALE: Total length 2.48. Carapace 0.94 long, 0.69 wide. Abdomen 1.20 long, 0.64 wide. Carapace pigmentation reduced to trace behind eyes, median patch absent; abdominal dorsum patterned (fig. 374), venter with broken patches of pigment between spinnerets and epigastric furrow; sternum unpigmented. Tarsal organ with three receptor lobes, median one slightly longer (fig. 385). Claws typical.

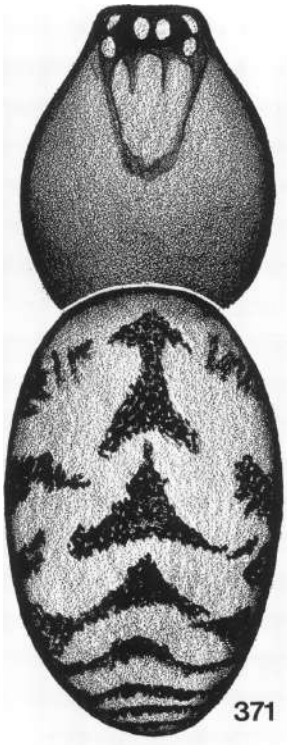
	I	II	III	IV	Palp
Femur	0.85	0.84	0.76	0.96	0.29
Patella	0.32	0.32	0.28	0.36	0.16
Tibia	0.68	0.64	0.52	0.77	0.20
Metatarsus	0.57	0.56	0.52	0.77	—
Tarsus	0.40	0.36	0.32	0.38	0.17
Total	2.82	2.72	2.40	3.24	0.82

Distal portion of embolus much more strongly curved than in *A. musca* (figs. 365, 366).

FEMALE: Unknown.

→

FIGS. 371–376. Dorsal view of carapace and abdomen of *Ascuta*. 371, 372. *A. parornata*, new species, female, male. 373. *A. ornata* Forster, female. 374. *A. montana*, new species, male. 375. *A. leith*, new species, female. 376. *A. monowai*, new species, female.



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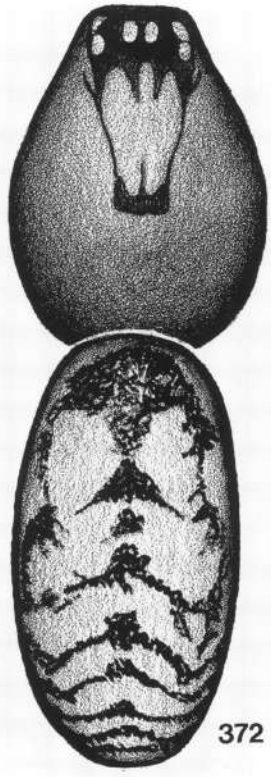

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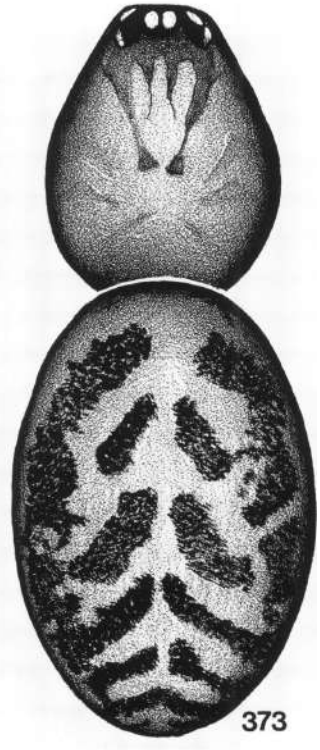

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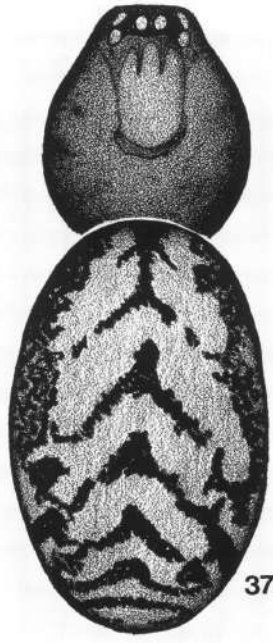

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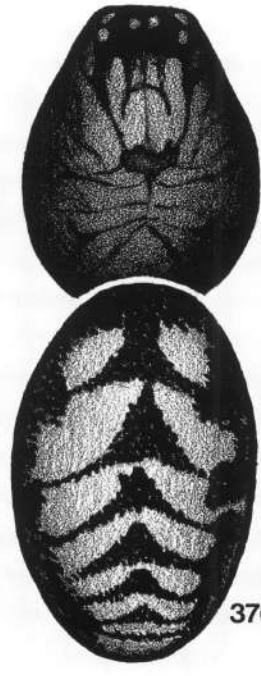

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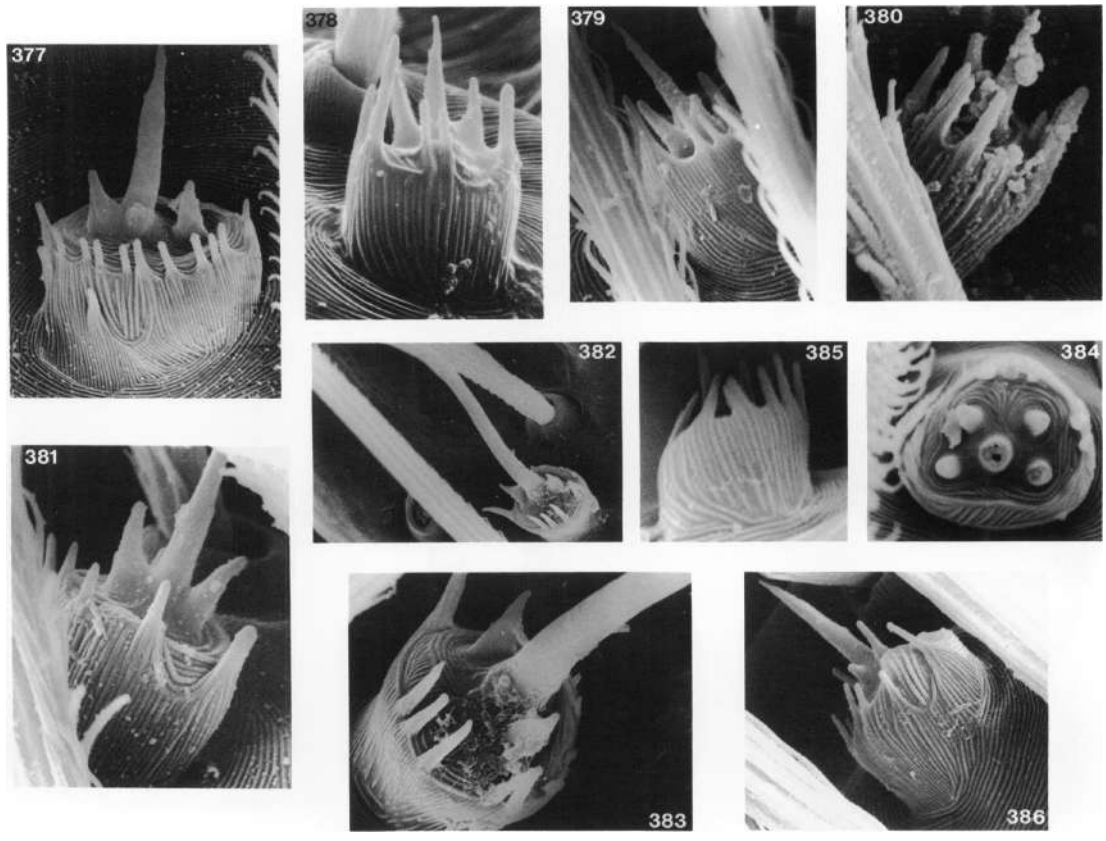


FIGS. 377–386. Tarsal organ of *Ascuta*. 377. *A. ornata* Forster. 378. *A. musca*, new species. 379. *A. leith*, new species. 380. *A. taupo*, new species. 381. *A. monowai*, new species. 382, 383. *A. insula*, new species. 384. *A. parornata*, new species. 385. *A. montana*, new species. 386. *A. cantuaria*, new species.

OTHER MATERIAL EXAMINED: One male collected with the holotype (AMNH).

DISTRIBUTION: Known only from the Nelson district, South Island.

Ascuta taupo, new species
Figures 356, 367, 368, 380

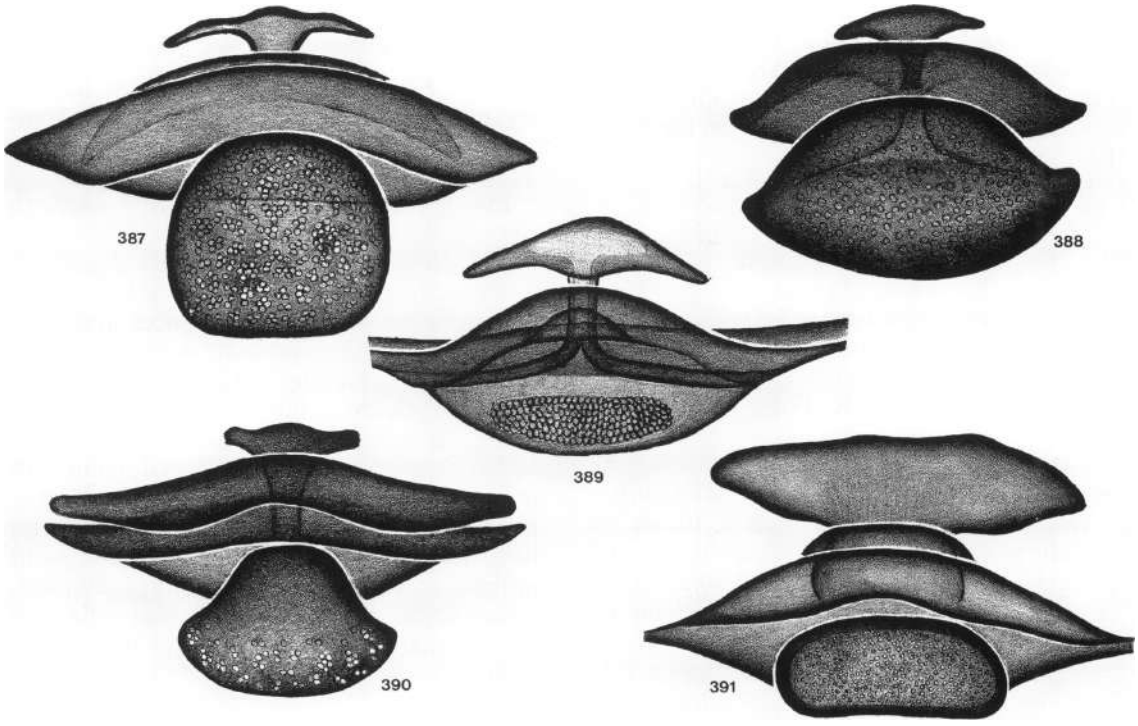
TYPE: Male holotype from a Berlese sample of litter from a *Pinus* plantation at an elevation of 750 m situated 22.3 km southeast of Taupo, North Island, New Zealand (April 7, 1980; A. Newton and M. Thayer), deposited in OMD.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species appears closely related to the South Island *A. montana* but differs in the abdominal pattern and the more extensive pigmentation of the carapace. The distal portion of the male bulb is also relatively longer than in *A. montana* and the paraembolic spine is situated closer to the tip of the embolus.

MALE: Total length 1.92. Carapace 0.88 long, 0.72 wide. Abdomen 1.08 long, 0.64 wide. Dorsal pattern of carapace and abdomen as in figure 356; abdominal venter with median band between spinnerets and furrow; sternum unpigmented. Tarsal organ typical (fig. 380) but with only two relatively short, subequal receptor lobes. Claws typical.

	I	II	III	IV	Palp
Femur	0.72	0.74	—	0.88	0.28
Patella	0.31	0.31	—	0.36	0.21
Tibia	0.64	0.60	—	0.76	0.21
Metatarsus	0.56	0.52	—	0.76	—
Tarsus	0.40	0.40	—	0.40	0.24
Total	2.63	2.57	—	3.16	0.94



FIGS. 387–391. Female genitalia of *Ascuta*, from above. 387. *A. cantuaria*, new species. 388. *A. monowai*, new species. 389. *A. musca*, new species. 390. *A. leith*, new species. 391. *A. insula*, new species.

Bulb sharply constricted at approximately half its length (fig. 367); beyond subdistal paembolic spine, embolus slender, evenly curved (fig. 368).

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from the North Island.

Ascuta leith, new species
Figures 375, 379, 390

TYPE: Female holotype sifted from litter at Leith Saddle, near Dunedin, Otago, South Island, New Zealand (October 1, 1979; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: On genitalic characters, this species seems closely related to *A. monowai*, but the two can be immediately separated by the reduced pigmentation of both the carapace and abdomen of *A. leith* and by distinct differences in the female genitalia.

FEMALE: Total length 2.92. Carapace 1.12 long, 0.88 wide. Abdomen 1.84 long, 1.16 wide. Carapace and abdomen patterned as in figure 375; dorsal abdominal chevrons weakly developed, venter with two broken bands of pigment between spinnerets and furrow; sternum unpigmented. Tarsal organ (fig. 379) with three receptor lobes, one as long as height of basal mound; lobes merging at base. Teeth on outer flange of claws relatively long.

	I	II	III	IV	Palp
Femur	0.96	0.88	0.80	1.08	0.44
Patella	0.40	0.40	0.32	0.40	0.21
Tibia	0.75	0.73	0.61	0.94	0.24
Metatarsus	0.68	0.64	0.64	0.92	—
Tarsus	0.40	0.40	0.40	0.44	0.36
Total	3.19	3.05	2.77	3.78	1.25

Lateral arms of anterior receptaculum relatively short (fig. 390); posterior receptaculum produced laterally with few pores scattered on posterior surface.

MALE: Unknown.

OTHER MATERIAL EXAMINED: One female and immatures taken from litter at the base of tussock at Flagstaff, near Dunedin, in December, 1975, by R. R. Forster (OMD).

DISTRIBUTION: Known only from the South Island.

Ascuta monowai, new species
Figures 376, 381, 388

TYPE: Female holotype collected from moss on beech forest floor at Lake Monowai, Southland, South Island, New Zealand (March 13, 1981; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species and *A. insula* are readily separated from all others by the full patterning of the carapace; *A. monowai* can be distinguished by the smaller anterior receptaculum.

FEMALE: Total length 3.04. Carapace 1.23 long, 0.96 wide. Abdomen 1.76 long, 1.05 wide. Carapace heavily shaded, pattern extending over whole surface (fig. 376); abdominal dorsum with prominent chevrons extending down full length, lateral margins heavily shaded, venter with dark patch at each side of booklungs and two thin lines between spinnerets and furrow; sternum with intercoxal patches along lateral margins. Tarsal organ (fig. 381) with three receptor spines, median longest, extending to approximately height of basal mound. Lateral flange of claws with 11 or 12 slender teeth.

	I	II	III	IV	Palp
Femur	1.16	1.14	1.04	1.23	0.48
Patella	0.44	0.40	0.32	0.55	0.24
Tibia	0.96	0.88	0.76	1.05	0.27
Metatarsus	0.89	0.84	0.76	1.09	—
Tarsus	0.44	0.44	0.57	0.44	0.40
Total	3.89	3.70	3.45	4.36	1.39

Genitalia closest to *A. leith* but posterior receptaculum larger, completely covered with secretory pores (fig. 388).

MALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from the South Island.

Ascuta cantuaria, new species
Figures 355, 386, 387

TYPE: Female holotype taken from leaf litter at Kennedy's Bush, Christchurch, Canterbury, South Island, New Zealand (July 15, 1966; A. D. Lowe), deposited in EDA.

ETYMOLOGY: The specific name refers to the type locality.

DIAGNOSIS: This species seems closely related to *A. leith* and *A. monowai* but can be separated from both by differences in the abdominal pattern and female genitalia.

FEMALE: Total length 3.36. Carapace 1.35 long, 1.12 wide. Abdomen 2.04 long, 2.90 wide. Carapace pattern limited to region between eyes and fovea; abdominal dorsum with prominent triangular chevrons and heavy marginal shading (fig. 355), venter with two longitudinal bands between spinnerets and epigastric furrow; sternum unpigmented. Tarsal organ with short median spine flanked by two smaller receptor lobes (fig. 386). Claws typical.

	I	II	III	IV	Palp
Femur	1.24	1.21	1.04	—	0.44
Patella	0.48	0.48	0.37	—	0.28
Tibia	1.04	1.04	0.71	—	0.31
Metatarsus	1.00	0.96	0.84	—	—
Tarsus	0.48	0.48	0.45	—	0.45
Total	4.24	4.17	3.41	—	1.48

Genitalia (fig. 387) with lateral arms of anterior receptaculum longer than in *A. leith* or *A. monowai*; posterior receptaculum oval in outline rather than produced laterally as in those two species.

MALE: Unknown.

OTHER MATERIAL EXAMINED: None.

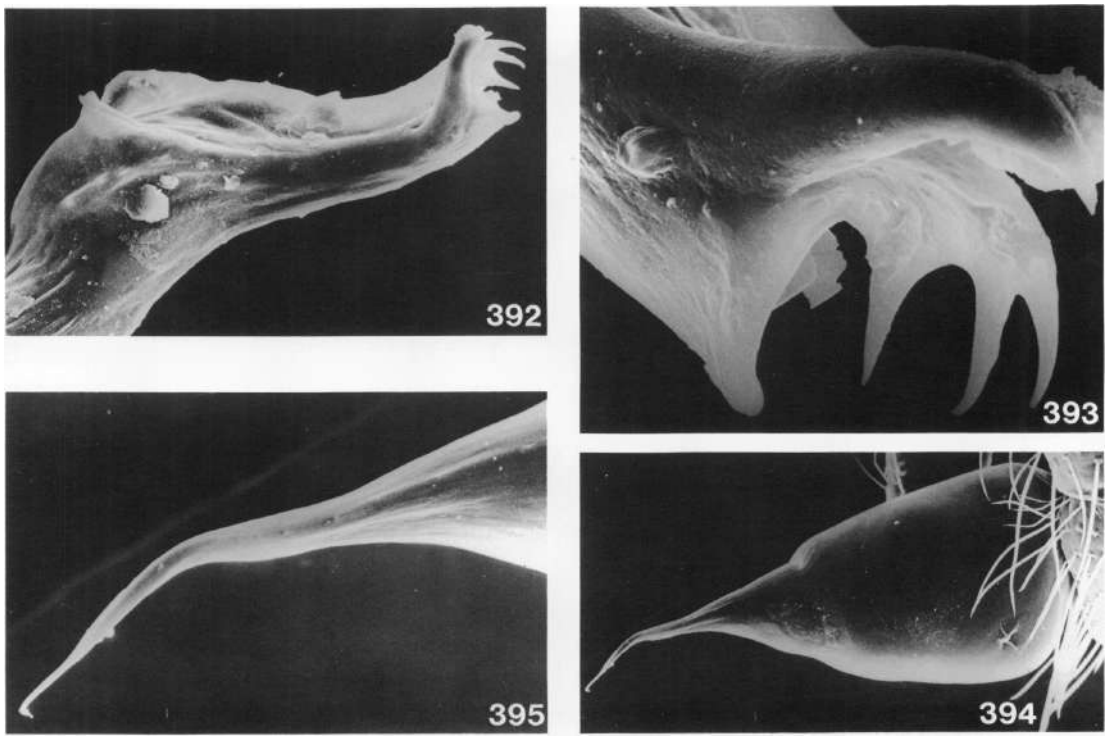
DISTRIBUTION: Canterbury, South Island.

Ascuta insula, new species
Figures 354, 382, 383, 391

TYPE: Female holotype taken in a pitfall trap at the frog bank, Stephen Island, Cook Strait, New Zealand (May 1978; D. C. Newman), deposited in EDA.

ETYMOLOGY: The specific name refers to the insular type locality.

DIAGNOSIS: This species can be immediately separated from all others by its large size, the extensive pigmentation of the ab-



FIGS. 392–395. Male palp of *Ascuta*. 392, 393. Embolus of *A. parornata*, new species. 394, 395. *A. ornata* Forster.

domen, and the distinctive form of the female genitalia.

FEMALE: Total length 4.20. Carapace 1.76 long, 1.27 wide. Abdomen 2.48 long, 1.49 wide. Patterning of carapace and abdomen as in figure 354; chevrons wide, almost contiguous (in contrast to all other species); abdominal venter with two parallel bands between spinnerets and furrow and conspicuous dark patches at outer margin of each booklung; sternum with both intercoxal shading and median band. Tarsal organ with three receptor spines, median very long, extending more than five times height of basal mound (figs. 382, 383). Lateral flange of claws strongly developed, with 13 relatively short teeth.

	I	II	III	IV	Palp
Femur	1.60	1.60	1.41	1.88	0.56
Patella	0.64	0.62	0.52	0.76	0.41
Tibia	1.59	1.40	1.16	2.00	0.36
Metatarsus	1.56	1.40	1.20	1.72	—
Tarsus	0.52	0.51	0.51	0.64	0.60
Total	5.91	5.53	4.80	7.00	1.93

Anterior receptaculum extremely large, irregular; posterior receptaculum transversely oval, completely covered with closely spaced secretory pores (fig. 391).

MALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Stephen Island.

Ascuta inopinata Forster
Figures 353, 364

Ascuta inopinata Forster, 1956, p. 137, figs. 80–82 (male holotype from Flora Track, Mount Arthur Tableland, Nelson, South Island, New Zealand, in NMW, examined).

NOTE: This species is readily recognized by the pale abdomen with a reduced chevron pattern (fig. 353). The tarsal organ is similar to that of *A. musca*, with three receptor spines, but the median spine is larger (Forster, 1956, fig. 82). The distal portion of the palpal bulb is broad with the parembolic process rela-

tively long (fig. 364). The teeth on the outer margin of the claws are long and slender.

MATERIAL EXAMINED: No females have been collected. In addition to the male type, one additional male has been examined from the Nelson Mountains (Fell Peak, elevation 1400 m, in Richmond Range, taken March 13, 1969, by J. C. Watt, EDA). Both specimens were collected from litter in subalpine scrub and herb.

DISTRIBUTION: Known only from montane habitats in Nelson, South Island.

Ascuta ornata Forster
Figures 351, 373, 377, 394, 395

Ascuta ornata Forster, 1956, p. 107, figs. 35–37 (male holotype from Lake Te Au, near Lake Te Anau, Fiordland, South Island, New Zealand, in CMC, examined).

NOTE: This species was clearly separated from all others originally described in *Ascuta* except *A. inopinata* by the pale, cream-colored abdomen and the reduced patterning on the dorsum of the abdomen (fig. 373). Those two species and the new species *A. parornata* do appear to be closely related but nevertheless show considerable differences in the embolic portion of the male bulb.

Additional information can now be added to the original description. The male bulb is characterized by a relatively long and slender embolus which is slightly hooked distally (figs. 394, 395). Scanning electron microscopy shows that there is a small spine on the undersurface near the tip. The tarsal organ has four receptor lobes, of which the median is as high as the basal mound (fig. 377); there are 12 cuticular lobes around the margin of the mound. The female genitalia are distinctive (fig. 351), with a prominent, thick-stemmed anterior receptaculum and a small, posterior receptaculum that is subtriangular in outline (from above) and closely covered with aggregations of pores.

DISTRIBUTION: Originally the species was known only from the type locality. Subsequent collections have been made from Thompson Sound to the south of Lake Te Au, and from Arthur's Pass some 200 km to the north. All specimens have been collected from moss in *Nothofagus* forest.

Ascuta parornata, new species
Figures 352, 371, 372, 384, 392, 393

TYPES: Female holotype taken from moss on beech forest floor at Cascade Creek, Fiordland, South Island, New Zealand (November 16, 1979; R. R. Forster), and male paratype from the same locality (February 16, 1966; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name refers to the close relationship with *A. ornata.*

DIAGNOSIS: This species seems closely related to *A. ornata* but the two can readily be separated by the different form of the female genitalia and the strikingly different structure of the embolic region of the male palp.

FEMALE: Total length 3.28. Carapace 1.32 long, 1.00 wide. Abdomen 2.04 long, 1.28 wide. Patterning reduced; abdomen pale (so that this species and *A. ornata* are readily distinguishable from all others except *A. inopinata* on this character alone, fig. 371); abdominal venter with patch near each posterior spiracle and broken band down median surface; sternum with three transverse bands linked with longitudinal median band. Tarsal organ with long median spine surrounded by four small spines; few (five) marginal tubercles (fig. 384). Lateral flange of claws lined with 16 or 17 teeth.

	I	II	III	IV	Palp
Femur	1.20	1.17	1.08	1.31	0.40
Patella	0.44	0.44	0.40	0.57	0.23
Tibia	1.12	0.88	0.76	1.08	0.31
Metatarsus	1.00	0.86	0.92	1.24	—
Tarsus	0.48	0.48	0.40	0.49	0.48
Total	4.24	3.83	3.56	4.69	1.42

Internal genitalia distinctive, with long transverse arms on anterior receptaculum and conspicuous half moon-shaped transverse posterior receptaculum closely covered with pores (fig. 352).

MALE: Total length 2.88. Carapace 1.27 long, 0.96 wide. Abdomen 1.56 long, 0.80 wide. Patterning as in female (fig. 372) except that both specimens examined lack pigment on sternum. Tarsal organ and claws as in female.

	I	II	III	IV	Palp
Femur	1.16	1.04	1.00	1.22	0.47
Patella	0.44	0.44	0.36	0.44	0.32
Tibia	1.13	1.04	0.88	1.12	0.40
Metatarsus	1.05	0.96	0.88	1.20	—
Tarsus	0.47	0.48	0.40	0.48	0.32
Total	4.25	3.96	3.52	4.46	1.51

Bulb stout, narrowing sharply to form distal trunk bearing subdistal spine adjacent to plate, margin of which bears three sharp spines (figs. 392, 393).

OTHER MATERIAL EXAMINED: One male and a number of females from the type locality, and two females from Haast Pass, South Island, taken on February 15, 1984, by R. R. Forster (OMD). All specimens were collected from moss in *Nothofagus* forest.

DISTRIBUTION: Known only from the South Island.

Ascuta australis Forster

Ascuta australis Forster, 1956, p. 130, figs. 69–71 (male holotype from Murderer's Cove, Big South Cape Island, New Zealand, in NMW, lost).

NOTE: The type specimens of this species cannot be located. As further material is not available, it has not been possible to ascertain the correct generic placement. The species is therefore retained in *Ascuta* for the time being. The shape of the palpal bulb, although simple, is distinctive and cannot be confused with that of any other species known from southern New Zealand except the Stewart Island *Tangata rakiura*. However, that species has a long receptor spine on the tarsal organ, in contrast to the short spine found in *A. australis*.

DISTRIBUTION: Known only from Big South Cape Island.

WAIPOUA, NEW GENUS

TYPE SPECIES: *Waipoua toronui*, new species.

ETYMOLOGY: The generic name is taken from the locality where the type species was found, and is feminine in gender.

DIAGNOSIS: *Waipoua* can be separated from all other New Zealand genera with uniform abdominal pigmentation by the presence of a wrinkled transverse bar on the anterior receptaculum of the female genitalia, and by the excavated embolic region of the male palp.

DESCRIPTION: Small orsolobids (total length 1.7–3.2) with carapace patterned between eyes and median surface and at least dorsal and lateral surfaces of abdomen evenly shaded or divided into distinct pattern by faint narrow transverse lines, without scuta. Chelicerae with two teeth on each margin. Sternum typical. Colulus small, with five hairs. Female genitalia with distinctive T-shaped anterior receptaculum with transverse bars irregularly wrinkled; posterior receptaculum of moderate size, pores restricted to circular poreplate or evenly distributed over sac. Spines limited to tibiae (usually p0-0-1, v0-0-2, r0-0-1) and metatarsi (usually p0-0-2, v0-0-2, r0-0-2) III and IV. Claws with prominent lateral flange but teeth not extending beyond flange; claws of legs I and II of female with markedly longer tooth third back from distal margin; spatulate hairs present below claws. Tarsal organ with long receptor spine; bothrium smooth. Embolus of male palp sinuous, excavated, sometimes with parembolic spine. Posterior spiracles close to furrow; tracheal trunks not joined.

DISTRIBUTION: The known species are restricted to the northern half of the North Island, except for *W. gressitti*, which is apparently endemic to Campbell Island.

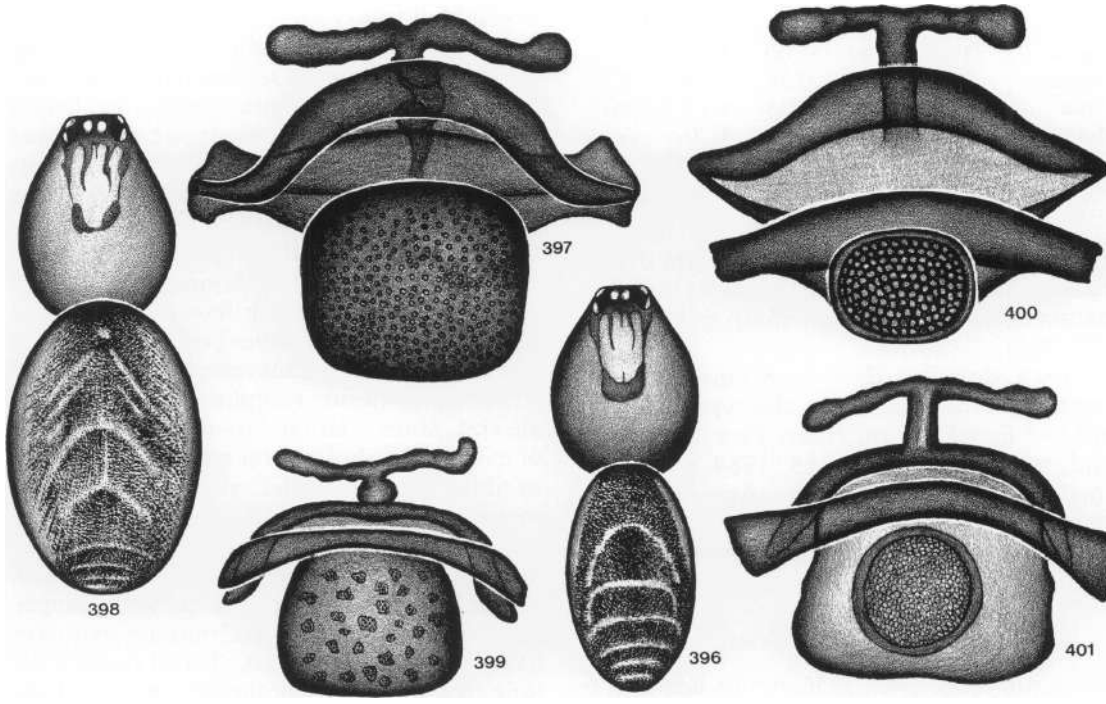
Waipoua toronui, new species
Figures 400, 418–420

TYPES: Female holotype and male paratype taken by pyrethrum fogging of fungus on a log in a kauri-podocarp-broadleaf-nikau palm forest at an elevation of 150 m at Toronui Track, Waipoua State Forest, Northland, North Island, New Zealand (April 13, 1980; A. Newton and M. Thayer), deposited in OMD.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species appears closely related to *W. totara* but can be separated by differences in the embolic region of the male palp and the structure of the female genitalia.

FEMALE: Total length 2.32. Carapace 1.05 long, 0.40 wide. Abdomen 1.12 long, 0.68



FIGS. 396–401. Structure of *Waipoua*. 396, 397. *W. ponanga*, new species. 398, 399. *W. montana*, new species. 400. *A. toronui*, new species. 401. *W. totara* (Forster). 396. Dorsal view of carapace and abdomen of male. 397, 399–401. Female genitalia, from above. 398. Dorsal view of carapace and abdomen of female.

wide. Dorsal abdominal and carapace pattern typical, similar to *W. ponanga*, abdominal venter and sternum unpigmented. Tarsal organ with long median receptor spine approximately twice as high as basal mound, flanked on each side by further short spine; small receptor mound also present at base of median spine (fig. 418); three pairs of marginal lobes present. Claws typical.

	I	II	III	IV	Palp
Femur	0.84	0.84	0.72	1.00	0.32
Patella	0.32	0.32	0.29	0.37	0.16
Tibia	0.68	0.68	0.52	0.76	0.20
Metatarsus	0.60	0.60	0.56	0.85	—
Tarsus	0.31	0.31	0.29	0.37	0.37
Total	2.75	2.75	2.38	3.35	1.05

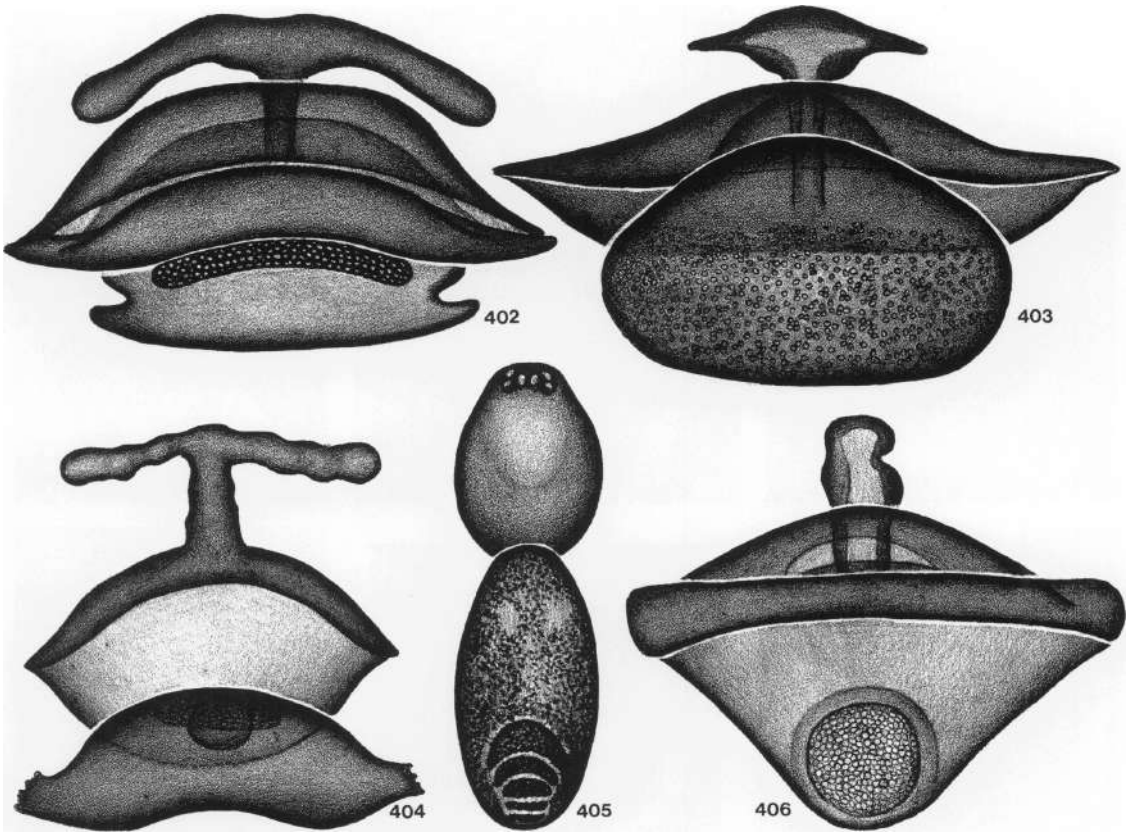
Internal genitalia as in figure 400; posterior receptaculum spherical sac completely covered dorsally by circular poreplate.

MALE: Total length 2.20. Carapace 1.00 long, 0.75 wide. Abdomen 1.16 long, 0.68 wide. As in female except claws of legs I and II lack long tooth on outer margin.

	I	II	III	IV	Palp
Femur	0.81	0.81	0.73	1.00	0.33
Patella	0.32	0.32	0.31	0.36	0.16
Tibia	0.80	0.78	0.56	0.80	0.16
Metatarsus	0.72	0.72	0.56	0.84	—
Tarsus	0.35	0.35	0.32	0.40	0.22
Total	3.00	2.98	2.48	3.40	0.87

Bulb (figs. 419, 420) pyriform, narrowing evenly to embolus, which has deep furrow for half its length before narrowing to form sharp slender distal spine; sperm duct apparently opens from ventral surface at base of distal spine.

OTHER MATERIAL EXAMINED: One female from the type locality and single females from two further localities in the Waipoua State Forest (Yakas Tree Track, elevation 350 m, pyrethrum fogging of *Metrosideros* bark, and Waikohatu Bridge, elevation 290 m, pyrethrum fogging of *Agathis* bark), both taken



FIGS. 402–406. Structure of *Waipoua*. 402. *W. hila*, new species. 403. *W. gressitti* (Forster). 404. *W. insula*, new species. 405, 406. *W. otiana*, new species. 402–404, 406. Female genitalia, from above. 405. Dorsal view of carapace and abdomen of female.

in April 1980, by A. Newton and M. Thayer (AMNH).

DISTRIBUTION: Known only from the Waipoua State Forest, North Island.

Waipoua totara (Forster), new combination
Figures 401, 421, 422

Pounamua totara Forster, 1956, p. 158, figs. 130–132 (male holotype from Totara Reserve, Manawatu, North Island, New Zealand, in CMC, examined).

NOTE: This species was originally placed in *Pounamua* on the basis of abdominal coloration, but the female genitalia (which were not examined at that time) show that *W. totara* is closely related to *W. toronui*. The distal portion of the bulb in the male has a different shape and the excavated region is relatively longer (figs. 421, 422). The posterior receptaculum of the female genitalia is much larger than in *W. toronui*, with the circular poreplate occupying only a part of the upper surface (fig. 401). The tarsal organ is similar to that of *W. toronui*.

MATERIAL EXAMINED: A series of both sexes collected more recently at the type locality.

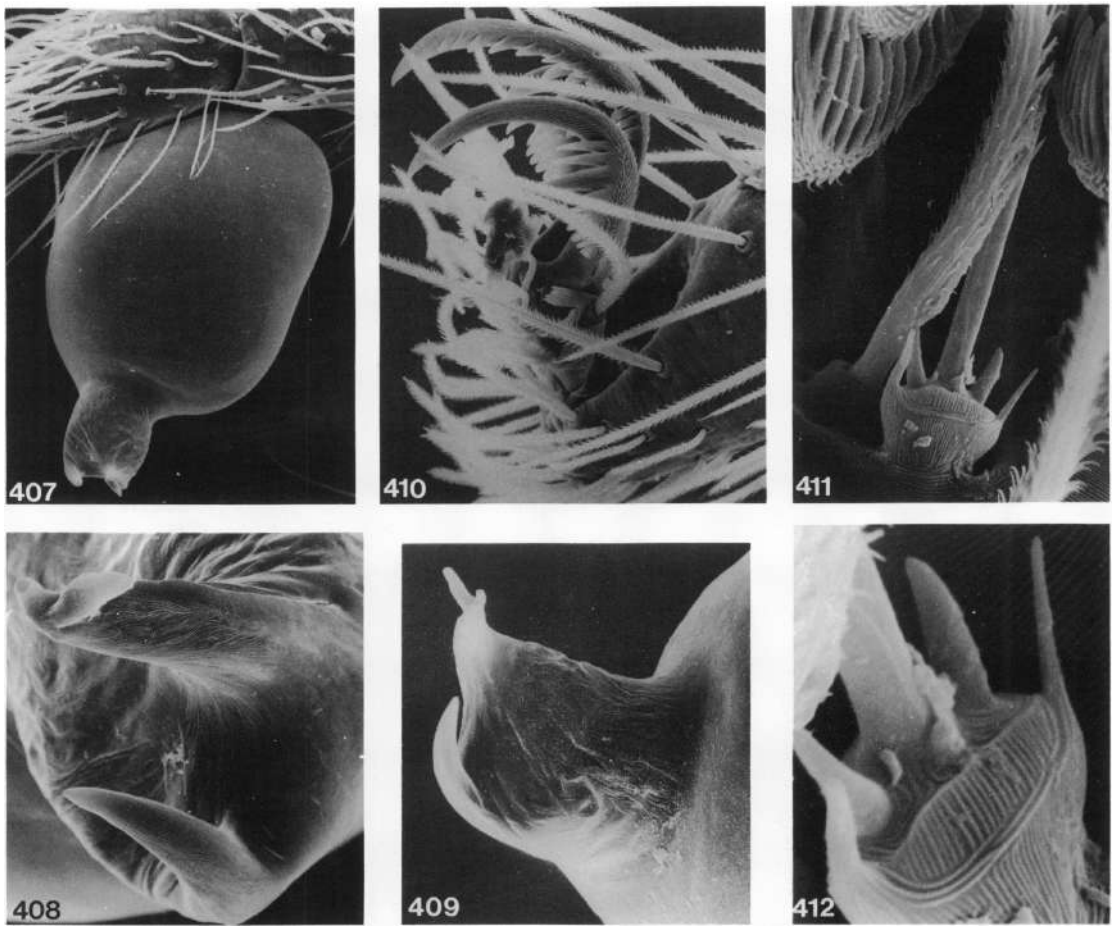
DISTRIBUTION: Known only from Manawatu, North Island.

Waipoua insula, new species
Figure 404

TYPE: Female holotype from Tawhiti Rahi, Poor Knights Island, New Zealand (September 9, 1980; D. J. Court), deposited in OMD.

ETYMOLOGY: The specific name refers to the insular distribution.

DIAGNOSIS: This species can be separated



FIGS. 407–412. *Waipoua hila*, new species. 407–409. Male palp. 410. Claws. 411, 412. Tarsal organ.

from all others by the form of the female genitalia, which are closest to those of *W. toronui* but differ in a number of details.

FEMALE: Total length 1.63. Carapace 0.70 long, 0.49 wide. Abdomen 0.90 long, 0.57 wide. Carapace with full pattern; abdomen evenly shaded, with few transverse lines across dorsum; sternum unpigmented. Tarsal organ with slender median spine flanked on each side by short receptor lobe. Claws typical.

	I	II	III	IV	Palp
Femur	0.45	0.45	0.41	0.49	0.21
Patella	0.16	0.16	0.16	0.21	0.09
Tibia	0.45	0.37	0.29	0.45	0.09
Metatarsus	0.33	0.29	0.25	0.45	—
Tarsus	0.21	0.21	0.18	0.21	0.13
Total	1.60	1.48	1.29	1.81	0.52

Genitalia distinctive (fig. 404), transverse lobe of anterior receptaculum wrinkled, extending to outer margins of muscle plate, relatively longer than in *W. toronui*; posterior receptaculum similar to that of *W. toronui* but poreplate much smaller.

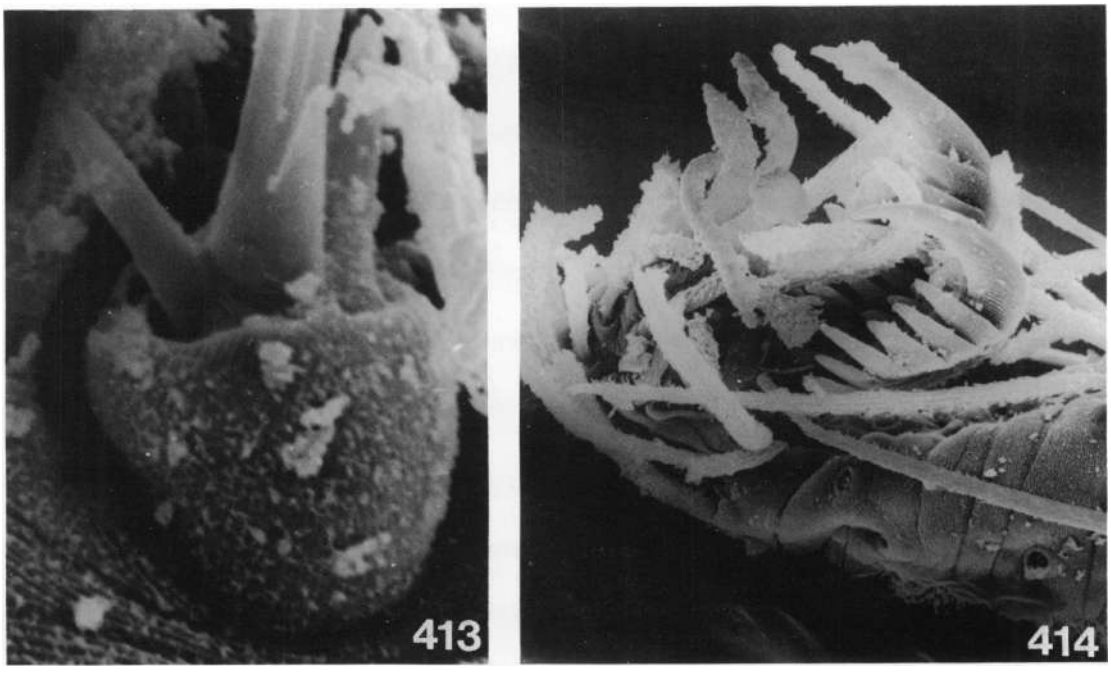
MALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Poor Knights Island.

Waipoua ponanga, new species
Figures 396, 397, 415–417, 423, 424

TYPES: Female holotype taken by pyrethrum fogging of sooty mold on a tree in a podocarp-broadleaf forest at an elevation of 700 m at Ponanga Saddle, west-southwest of Turangi, North Island, New Zealand (April



FIGS. 413, 414. *Waipoua otiana,* new species. 413. Tarsal organ. 414. Claws.

4–8, 1980; A. Newton and M. Thayer), and male paratype taken by pyrethrum fogging of tree ferns at an elevation of 680 m at Opepe Reserve, 16.5 km southeast of Taupo, North Island, New Zealand (April 5–8, 1980; A. Newton and M. Thayer), deposited in OMD.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species can be separated from *W. toronui* and *W. totara* by the presence of a parembolic spine on the male palp and the distribution of the secretory pores associated with the posterior receptaculum of the female, and from the closely related *W. montana* by differences in the female genitalia.

FEMALE: Total length 3.16. Carapace 1.20 long, 0.96 wide. Abdomen 1.91 long, 1.24 wide. Coloration similar to *W. toronui* (fig. 396), abdominal venter with two narrow lines between spinnerets and furrow but otherwise pale. Tarsal organ (fig. 415) with strong median spine almost three times higher than basal mound, three small subequal accessory receptor lobes, and six or seven marginal cuticular lobes. Claws (fig. 417) of legs I and II with prominent lateral flange lined with 14 teeth becoming progressively longer toward distal margin.

	I	II	III	IV	Palp
Femur	1.08	1.05	0.93	1.24	0.44
Patella	0.44	0.41	0.40	0.47	0.25
Tibia	0.96	0.89	0.72	1.05	0.25
Metatarsus	0.85	0.85	0.64	1.00	—
Tarsus	0.44	0.41	0.37	0.44	0.40
Total	3.77	3.61	3.06	4.20	1.34

Genitalia (fig. 397) with posterior receptaculum relatively large, bearing numerous simple pores evenly spread over entire surface.

MALE: Total length 2.47. Carapace 1.05 long, 0.84 wide. Abdomen 1.40 long, 0.84 wide. Coloration and tarsal organ as in female. Claws of legs I and II as in figure 416.

	I	II	III	IV	Palp
Femur	1.12	1.04	0.93	1.27	0.36
Patella	0.40	0.40	0.33	0.40	0.20
Tibia	1.00	0.96	0.80	1.05	0.25
Metatarsus	0.89	0.85	0.68	1.08	—
Tarsus	0.48	0.46	0.41	0.48	0.26
Total	3.89	3.71	3.15	4.28	1.07

Palpal bulb with proximal margin of distal

fold projected into distinct spine (figs. 423, 424).

OTHER MATERIAL EXAMINED: A further male and female taken with the holotype (AMNH).

DISTRIBUTION: Known only from the North Island.

Waipoua montana, new species
Figures 398, 399

TYPE: Female holotype taken from moss at an elevation of 3000 ft at Dawson Falls, Mount Egmont, North Island, New Zealand (February 23, 1967; C. L. Wilton), deposited in OMD.

ETYMOLOGY: The specific name refers to the montane type locality.

DIAGNOSIS: The female genitalia suggest a close relationship with *W. ponanga,* separated from this species by the narrower muscle plates associated with the female genitalia and by differences in the grouping of pores on the posterior receptaculum.

FEMALE: Total length 2.84. Carapace 1.12 long, 0.88 wide. Abdomen 1.64 long, 1.12 wide. Dorsal patterning as in figure 398, lateral margins and central surfaces pale, two lines extend from spinnerets to posterior spiracles; sternum unpigmented. Tarsal organ typical, with median spine twice as long as basal mound and three subequal smaller receptor spines. Claws typical.

	I	II	III	IV	Palp
Femur	1.13	1.13	0.96	1.36	0.47
Patella	0.48	0.48	0.40	0.48	0.20
Tibia	0.80	0.80	0.64	1.00	0.35
Metatarsus	0.84	0.80	0.64	1.08	—
Tarsus	0.44	0.40	0.36	0.44	0.41
Total	3.69	3.61	3.00	4.36	1.43

Genitalia as in figure 399.

MALE: Unknown.

OTHER MATERIAL EXAMINED: One female taken with the holotype (AMNH).

DISTRIBUTION: Known only from Mount Egmont, North Island.

Waipoua hila, new species
Figures 402, 407–412

TYPES: Female holotype captured in a window trap in a broadleaf-podocarp forest at an elevation of 350 m at Yakes Tree Track, Waipoua State Forest, Northland, North Island, New Zealand (April 11–14, 1980; A. Newton and M. Thayer), and male paratype from a pitfall trap in an *Agathis* and podocarp-broadleaf forest at an elevation of 335 m at Te Matua Ngarere Track in the Waipoua State Forest (same dates and collectors), deposited in OMD.

ETYMOLOGY: The specific name is an arbitrary combination of letters.

DIAGNOSIS: The palpal bulb and female genitalia are distinctive and clearly separate this species from all others.

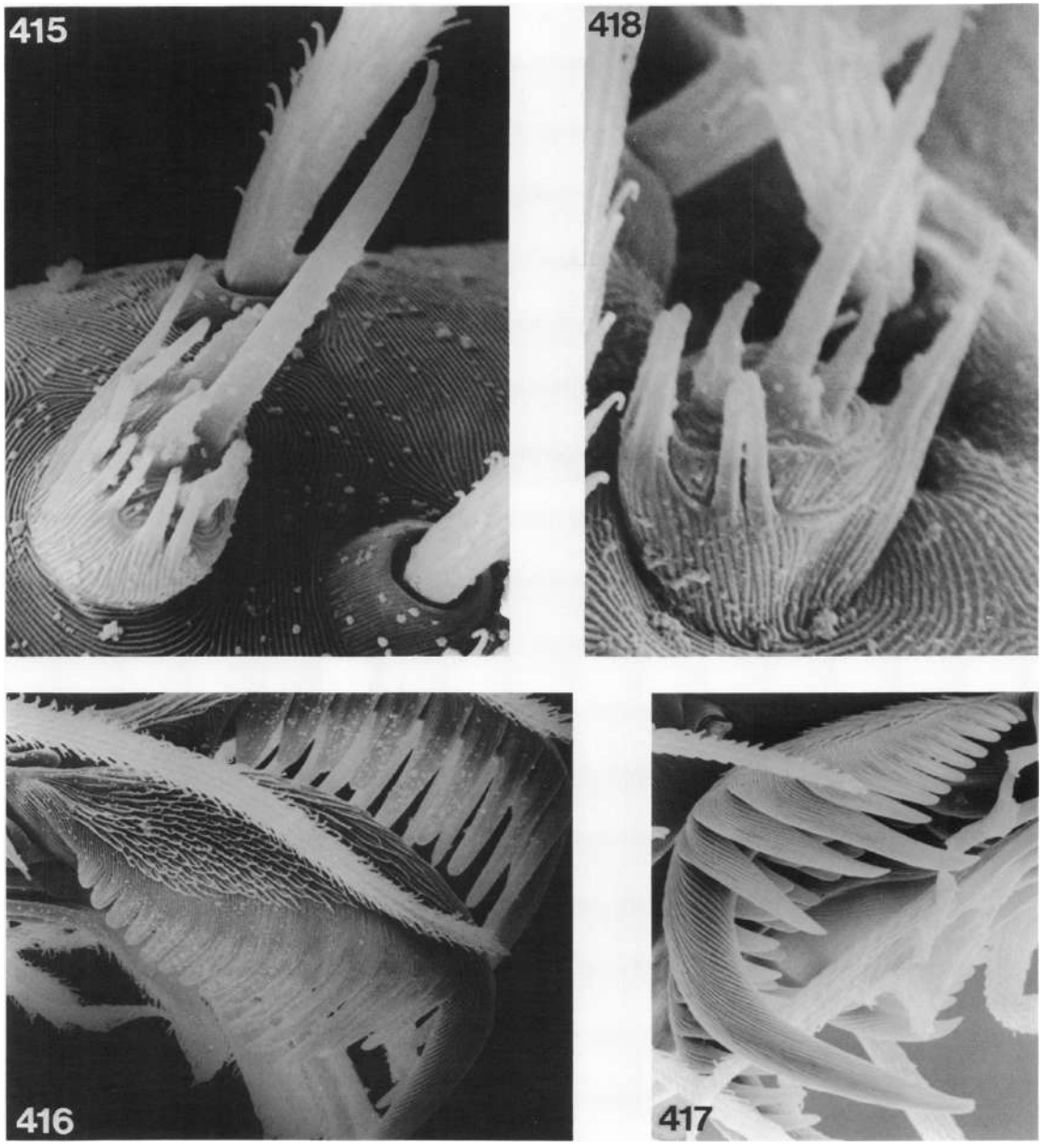
FEMALE: Total length 3.04. Carapace 1.28 long, 1.00 wide. Abdomen 1.72 long, 0.96 wide. Abdomen completely shaded with purplish pigment except for epigastric region and area immediately behind furrow, dorsum with faint lines; carapace with vestiges of pattern behind eyes; sternum unpigmented. Tarsal organ with transverse row of three receptor spines, median approximately five times as high as basal mound (fig. 411); marginal lobes few, on some organs only one at each outer margin and two additional lobes on lower posterior surface (fig. 412). Claws with eight teeth along lateral flange, sixth one longest (fig. 410).

	I	II	III	IV	Palp
Femur	1.28	1.28	1.27	1.44	0.44
Patella	0.56	0.53	0.40	0.56	0.28
Tibia	1.12	1.12	0.80	1.20	0.28
Metatarsus	1.12	1.12	0.85	1.24	—
Tarsus	0.47	0.44	0.44	0.46	0.48
Total	4.55	4.49	3.76	4.90	1.48

Genitalia (fig. 402) with transverse bars of anterior receptaculum not wrinkled as in most species, cuticle thicker; posterior receptaculum transverse, with band of closely spaced pores grouped across anterior surface.

MALE: Total length 2.56. Carapace 1.25 long, 0.88 wide. Abdomen 1.28 long, 0.81 wide. General structure including claw dentition as in female.

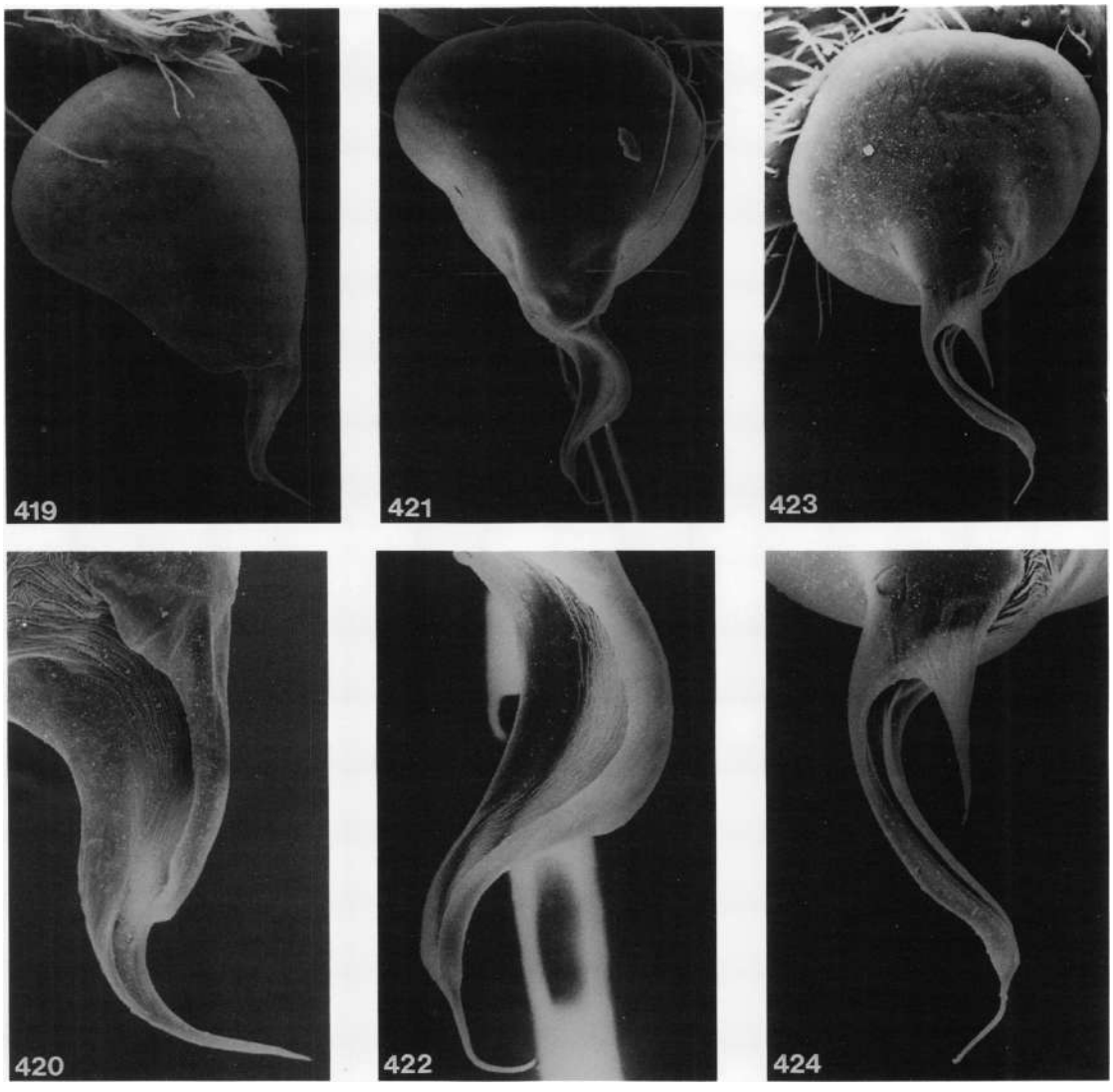
	I	II	III	IV	Palp
Femur	1.20	1.12	0.96	1.36	0.40
Patella	0.44	0.44	0.40	0.42	0.24
Tibia	1.04	0.92	0.80	1.22	0.20
Metatarsus	1.00	0.96	0.89	1.16	—
Tarsus	0.44	0.44	0.40	0.48	0.28
Total	4.12	3.88	3.45	4.64	1.12



FIGS. 415–418. Structure of *Waipoua*. 415–417. *W. ponanga*, new species. 418. *W. toronui*, new species. 415, 418. Tarsal organ. 416. Claws, leg I, male. 417. Claws, leg I, female.

Palpal bulb distinctive, squat, almost rectangular in outline, with short embolic region as wide as long; sperm duct opening from short tube on anterodistal margin; short paraembolic spine on posterior margin (figs. 407–409).

OTHER MATERIAL EXAMINED: NEW ZEALAND: *North Island:* Waipoua State Forest: Wairau Summit, elevation 387 m, fogging *Ganoderma* spp. in podocarp-mixed broadleaf forest, Apr. 11–14, 1980 (A. Newton, M. Thayer, AMNH); Kauri Ricker track, elevation 100 m, window trap in kauri-podocarp-broadleaf forest, Apr. 11–14, 1980 (A.



FIGS. 419–424. Male palp of *Waipoua*. 419, 420. *W. toronui*, new species. 421, 422. *W. totara* (Forster). 423, 424. *W. ponanga*, new species.

Newton, M. Thayer, AMNH); Waikohatu Bridge, elevation 290 m, *Agathis*-podocarp-broadleaf forest, Apr. 11–14, 1980 (A. Newton, M. Thayer, AMNH).

DISTRIBUTION: Known only from the Waipoua State Forest, North Island.

Waipoua otiana, new species
Figures 405, 406, 413, 414

TYPE: Female holotype from an elevation of 950 m at Holly Hut, Mount Egmont, North Island, New Zealand (November 3, 1975; G. Kuschel), deposited in EDA.

ETYMOLOGY: The specific name is an arbitrary combination of letters.

DIAGNOSIS: This species is sharply separated from all others in the genus by the abdominal pattern and the loss of the transverse rods leading from the distal portion of the anterior receptaculum (fig. 406).

FEMALE: Total length 2.96. Carapace 1.33 long, 1.00 wide. Abdomen 1.68 long, 0.92

wide. Dorsal patterning as in figure 405, carapace and sternum unpigmented, abdomen pigmented only on dorsal surface: anterior two-thirds evenly pigmented, posterior one-third with pale, transverse lines separating five patches seemingly homologous with patches spread over full surface in other species. Distolateral spines lacking on tibiae III and IV; extra pair present on distodorsal surface of metatarsi III and IV. Tarsal organ without marginal lobes (fig. 413), three receptor spines contiguous, occupying most of receptor surface; median spine long, bearing short secondary spine near base. Lateral flange of claws of legs I and II only weakly developed, with seven teeth (fig. 414).

	I	II	III	IV	Palp
Femur	1.20	1.20	0.93	1.29	0.48
Patella	0.56	0.48	0.45	0.56	0.20
Tibia	1.08	0.92	0.76	1.08	0.28
Metatarsus	1.08	0.96	0.87	1.24	—
Tarsus	0.44	0.44	0.41	0.52	0.44
Total	4.36	4.00	3.42	4.69	1.40

Genitalia (fig. 406): anterior receptaculum simple lobe but anterior surface irregular, suggesting it could have developed by reduction from T-shaped organ typical for genus; posterior receptaculum typical, with secretory pores restricted to well-defined circular plate as in *W. totara* and *W. toronui.*

MALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Mount Egmont, North Island.

Waipoua gressitti (Forster), new combination
Figures 403, 782, 783

Pounamua gressitti Forster, 1964, p. 68, figs. 26–29 (male holotype from Courrejolles Peninsula, Campbell Island, in NMW, examined).

NOTE: Numerous specimens were available from a number of localities on Campbell Island when the species was first described, and the species appears to be common on the island. Most of the specimens were collected from moss and litter associated with tussock. A few further specimens (listed below) were available for the present study.

The original generic placement was based primarily on the pigmentation of the abdomen, which is very similar to that characteristic for *Pounamuella.* With the additional evidence provided by the female genitalia, it is now evident that the species is in fact related to the forms we place in *Waipoua* and in particular is not at all closely related to the Auckland Island *Pounamuella australis* (Forster).

The original description and figures are adequate for species recognition and need not be repeated here. We have examined the female genitalia and provide an illustration of this organ (fig. 403). It differs from those of all other species of *Waipoua* in the shape of the anterior receptaculum, where the transverse bar is reduced. The posterior receptaculum is large, transversely oval, and covered with numerous irregularly spaced pores on the posterior two-thirds of the sac. The palpal bulb is pyriform and bears a short, slender distal spine (fig. 783). The absence of a long, spinous receptor on the tarsal organ was noted in the original description and listed as the main character separating the species from the Auckland Island *P. australis.* Four small receptor lobes are discernible (fig. 782), grouped 1-2-1 with the outer lobes larger; the basal mound bears seven marginal lobes.

NEW RECORDS: CAMPBELL ISLAND: Mount St. Col, moss and lichens, Feb. 24, 1947 (J. H. Sorensen, OMD); Puiseaux Peak, elevation 390 m, from plant mats and moss, Jan. 21, 1969 (R. Taylor, G. Kuschel, EDA); Yvon Villareaux, elevation 330 m, from plant mats, Jan. 24, 1969 (R. Taylor, G. Kuschel, EDA); Lookout Bay, from litter, Jan. 1969 (G. Kuschel, EDA).

DISTRIBUTION: Known only from Campbell Island.

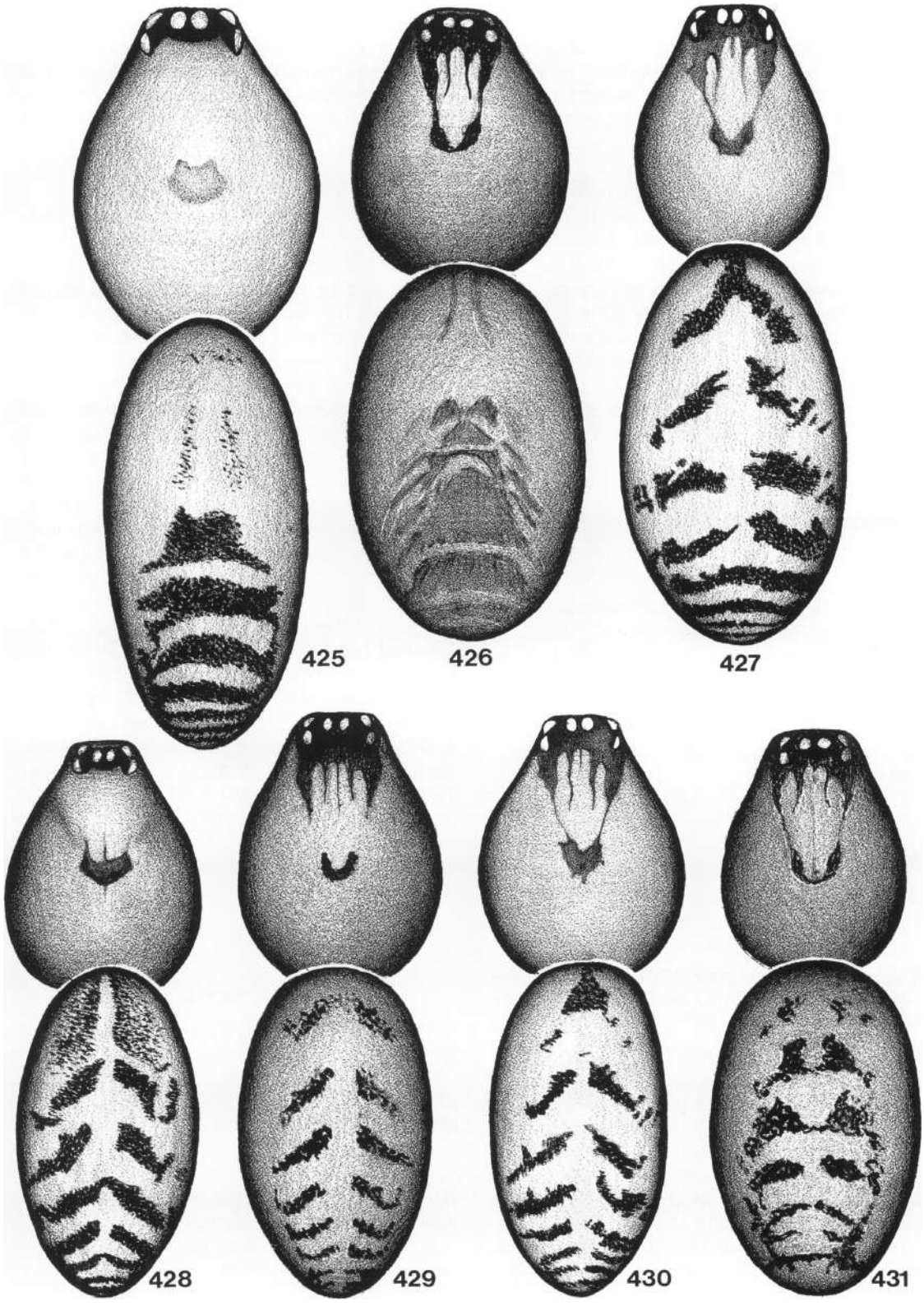
WILTONIA, NEW GENUS

TYPE SPECIES: *Wiltonia graminicola,* new species.

ETYMOLOGY: The generic name is in honor of C. L. Wilton, a student of New Zealand spiders for over forty years.

DIAGNOSIS: *Wiltonia* is characterized by extensive spination of tibiae and metatarsi III and IV, sexual dimorphism of the claws, and distinctive female genitalia.

DESCRIPTION: Medium size orsolobids (total length 2.3–4.0) with either only weakly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developed chevron pattern on abdominal dorsum or more even pigmentation where chevrons are delineated by narrow paler lines, without scuta; carapace with pattern behind eyes. Chelicerae with two teeth on each margin. Sternum scutiform, slightly longer than wide. Colulus typical. Female genitalia with lobulate anterior receptaculum and wide but shallow posterior receptaculum; secretory pores restricted to central poreplate or in some species opening into secondary sac sometimes lying above primary receptaculum. Legs usually with full row of spines on prolateral and retrolateral surfaces of tibiae and metatarsi III and IV. Claws of legs I and II in female with distinctive, triangular, dentate lateral flange followed by further teeth; claws of legs III and IV not modified in same way, with distal three teeth distinctly longer than more proximal teeth; male claws with simple lateral flange; spatulate hairs on smooth, slender stalks present below claws (fig. 435). Tarsal organ with three or four short receptor lobes and numerous marginal lobes; bothria smooth (fig. 440); proprioreceptor bristles slender, distally branched (fig. 441). Male bulb simple but with embolic region often flattened or otherwise modified. Spiracles typical.

DISTRIBUTION: The genus appears to be restricted to the South Island. In addition to the nine species described below, there are a number of others for which inadequate material is currently available. This material indicates that the genus is found in most parts of the South Island. It has not been found on Stewart Island or any of the outlying islands.

DISCUSSION: The two species (*W. fiordensis* and *W. pecki*) with diffuse shading on the dorsum of the abdomen (as contrasted to the definite chevron pattern found in all other species) also retain a few spines on the tibiae of legs I and II. This latter character is considered plesiomorphic for the family and is also found in the more typically patterned *W. nelsonensis*. The association of the two forms of abdominal patterning within a single genus is problematical and crops up a number of times within the New Zealand fauna where other characters, such as the female genitalia and tarsal organ, suggest that such generic associations are correct.

Wiltonia graminicola, new species
Figures 427, 432–442

TYPES: Female holotype and male paratype collected from litter at the base of tussock at Flagstaff, near Dunedin, Otago, South Island, New Zealand (February 15, 1982; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name refers to the typical habitat of the species in tussock grassland.

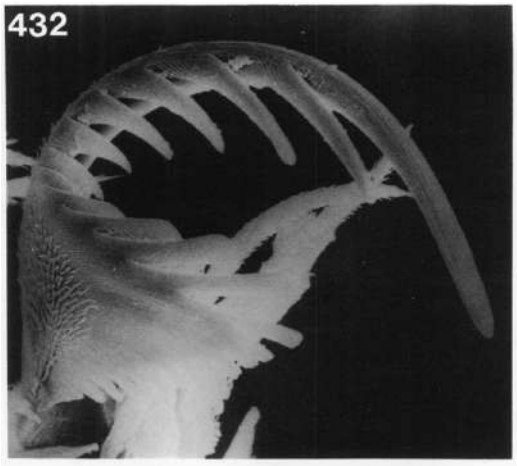
DIAGNOSIS: The species can be easily distinguished from all others by differences in both the male and female genitalia.

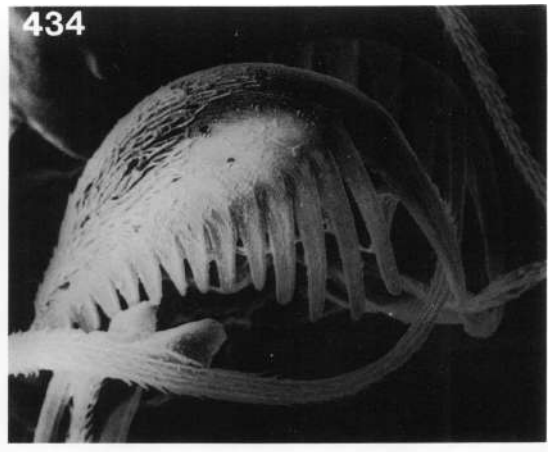
FEMALE: Total length 2.64. Carapace 1.24 long, 0.92 wide. Abdomen 1.44 long, 0.92 wide. Entire animal pale straw yellow, dorsal patterning as in figure 427; abdominal venter unpigmented except for small, dark patches near posterior spiracles and around spinnerets; sternum unpigmented. Leg spination: tibiae: III p1-1-1, v0-0-2, r0-1-1; IV p1-1-1, v0-0-2, r-1-1-1; metatarsi: III p1-1-2, v0-0-2, r0-1-2; IV p0-1-2, v0-0-2, r1-1-2. Tarsal organ (fig. 437) squat, with three short distally rounded receptor lobes in row; margin with 13 slender lobes. Claws of legs I and II with distinct triangular lateral flange bearing short teeth on proximal and fewer longer teeth on distal slope; six progressively longer teeth extend beyond flange (fig. 432); claws of legs III and IV with uniform outer flange bearing nine teeth increasing in size from base to seventh tooth, distal two teeth shorter than seventh tooth (fig. 433).

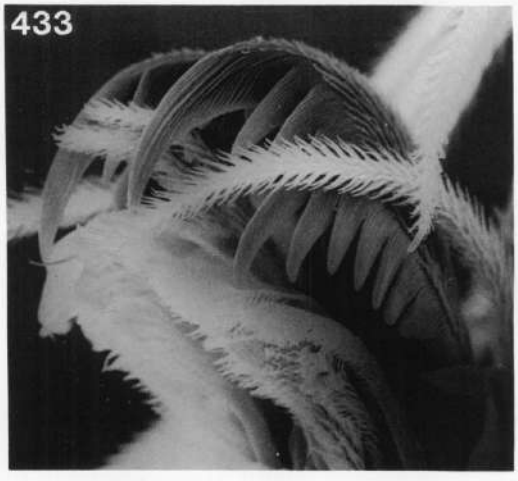
	I	II	III	IV	Palp
Femur	1.00	1.00	0.81	1.23	0.36
Patella	0.40	0.40	0.37	0.48	0.20
Tibia	0.85	0.85	0.68	1.05	0.20
Metatarsus	0.88	0.88	0.64	1.16	—
Tarsus	0.40	0.40	0.37	0.40	0.42
Total	3.53	3.53	2.87	4.32	1.18

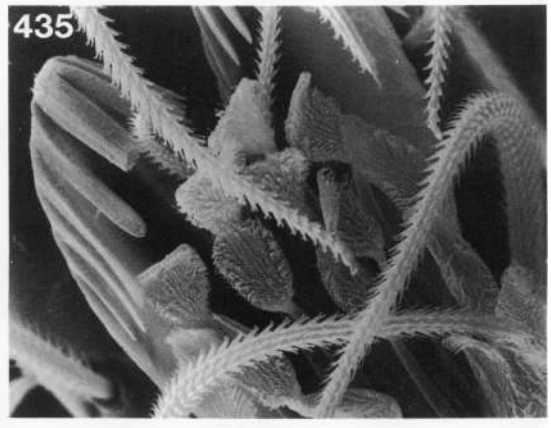
←

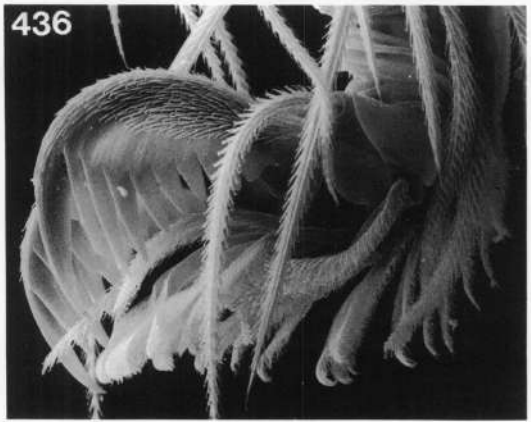
FIGS. 425–431. Dorsal view of carapace and abdomen of *Wiltonia*. 425. *W. elongata*, new species, male. 426. *W. fiordensis*, new species, female. 427. *W. graminicola*, new species, female. 428. *W. lima*, new species, female. 429. *W. eylesi*, new species, male. 430. *W. porina*, new species, female. 431. *W. nelsonensis*, new species, female.

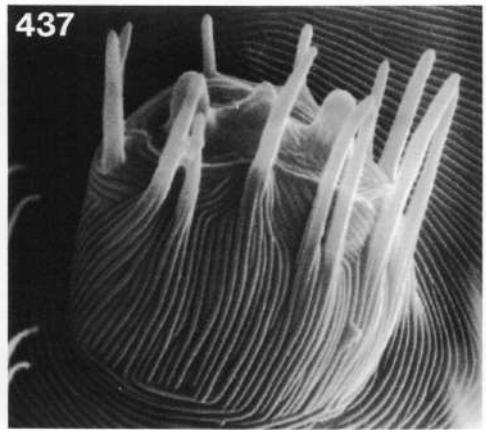












FIGS. 432–437. *Wiltonia graminicola,* new species. 432. Claws, leg I, female. 433. Claws, leg IV, female. 434. Claws, leg I, male. 435. Claw tuft, leg I, male. 436. Claws, leg IV, male. 437. Tarsal organ.

Internal genitalia (fig. 442) with anterior receptaculum distended distally; posterior receptaculum with irregular poreplate on mid-dorsal surface pierced by numerous closely spaced pores.

MALE: Total length 2.36. Carapace 1.12

long, 0.83 wide. Abdomen 1.08 long, 0.72 wide. As in female except outer flange of all claws with 13 teeth increasing in length distally (figs. 434, 436).

	I	II	III	IV	Palp
Femur	1.09	1.09	0.92	1.24	0.49
Patella	0.40	0.40	0.36	0.53	0.24
Tibia	0.92	0.92	0.73	1.08	0.24
Metatarsus	0.85	0.85	0.65	1.08	—
Tarsus	0.41	0.41	0.37	0.44	0.29
Total	3.67	3.67	3.03	4.37	1.26

Bulb (fig. 438) with embolic region flattened, expanded to form hood with margins irregularly pectinate (fig. 439).

OTHER MATERIAL EXAMINED: NEW ZEALAND: *South Island:* Otago: Flagstaff, sifted from litter at base of tussock, Dec. 20–Apr. 2, 1977–1982 (R. R. Forster, OMD, AMNH); Leith Saddle, mixed forest, litter, pitfall traps, beating low shrubs, Jan. 25–May 19, 1952–1979 (B. J. Marples, R. R. Forster, C. L. Wilton, OMD); Whare Flat, Mar. 20, 1979 (R. R. Forster, OMD).

DISTRIBUTION: The species is apparently limited to tussock grassland in Otago, South Island, and has been collected from sea level to approximately 1000 m in subalpine grasslands. Although it has occasionally been taken in forests adjacent to grassland, this does not appear to be the typical habitat.

Wiltonia porina, new species
Figures 430, 443, 453, 457

TYPES: Male holotype from litter in mixed forest at Trotters Gorge, South Island, New Zealand (February 27, 1967; R. R. Forster), and female paratype from the same locality (July 27, 1967; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name is an arbitrary combination of letters.

DIAGNOSIS: This species can be separated from *W. graminicola* and *W. lima* by differences in the embolic region of the male palp and the distinct secondary posterior receptaculum associated with the secretory pores, and from *W. nelsonensis* by differences in the female genitalia.

MALE: Total length 2.56. Carapace 1.12 long, 0.95 wide. Abdomen 1.36 long, 0.74 wide. Dorsal patterning of body as in figure 430, abdominal venter with two midventral patches. Leg spination: tibiae III, IV p1-1-1, v0-0-2, r1-1-1; metatarsi: III d0-0-1, p1-0-2, v0-0-2, r1-0-2; IV p1-1-2, v0-0-2, r1-1-2. Tarsal organ slightly higher than wide, with three short receptor lobes and fringe of 11 marginal lobes (fig. 457). Claws typical, with 12 teeth along outer flange.

	I	II	III	IV	Palp
Femur	1.06	1.05	0.92	1.19	0.39
Patella	0.41	0.41	0.36	0.41	0.26
Tibia	1.09	1.00	0.72	1.13	0.26
Metatarsus	1.08	0.98	0.69	1.16	—
Tarsus	0.41	0.40	0.40	0.43	0.32
Total	4.05	3.84	3.09	4.32	1.23

Embolus narrow, spinous, only slightly flattened (fig. 453).

FEMALE: Total length 2.80. Carapace 1.08 long, 0.91 wide. Abdomen 1.68 long, 0.98 wide. As in male but with claws of legs 1 and II typical for genus.

	I	II	III	IV	Palp
Femur	1.08	1.06	0.92	1.20	0.44
Patella	0.44	0.44	0.40	0.51	0.24
Tibia	0.82	0.81	0.72	1.00	0.27
Metatarsus	0.77	0.81	0.72	1.16	—
Tarsus	0.40	0.40	0.39	0.40	0.39
Total	3.51	3.52	3.15	4.27	1.34

Genitalia (fig. 443) with anterior receptaculum distally distended; secretory pores of posterior receptaculum irregularly grouped on secondary sac.

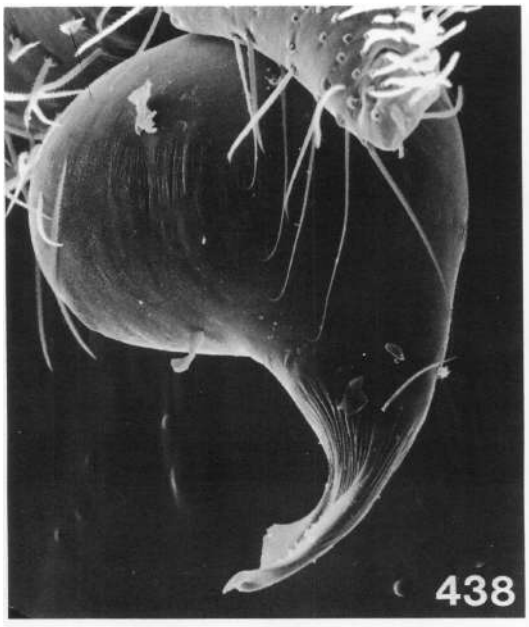
OTHER MATERIAL EXAMINED: Further specimens collected with the types (OMD, AMNH).

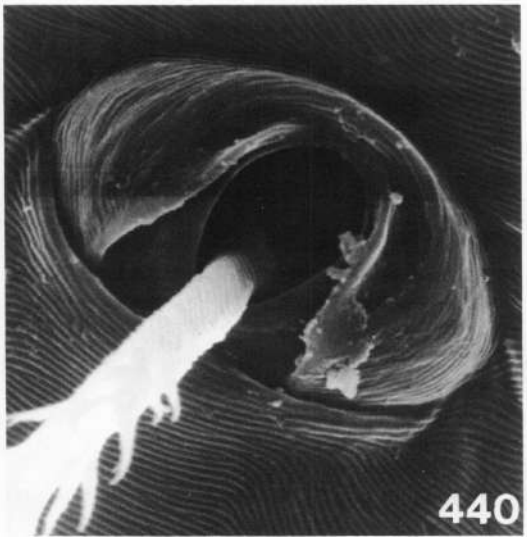
DISTRIBUTION: Apparently a forest-dwelling species restricted to the type locality, and replaced in grassland in Otago, South Island, by the widespread *W. graminicola.*

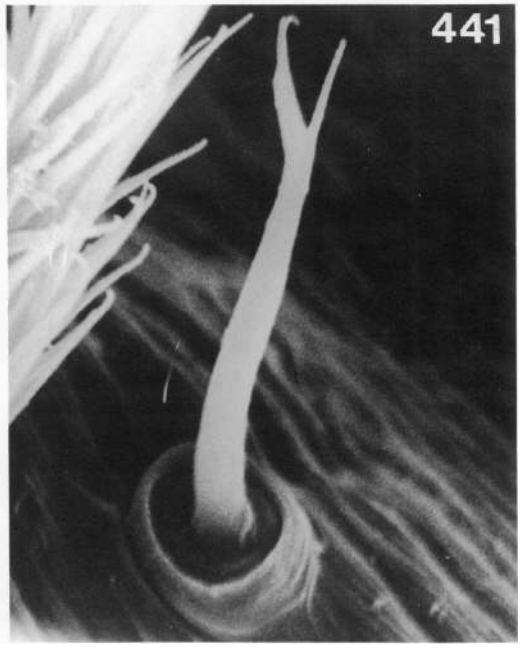
Wiltonia lima, new species
Figures 428, 445, 448, 458

TYPES: Female holotype and male paratype sifted from litter in mixed forest at Peel Forest, Canterbury, South Island, New Zealand (May 10, 1983; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name is an arbitrary combination of letters.



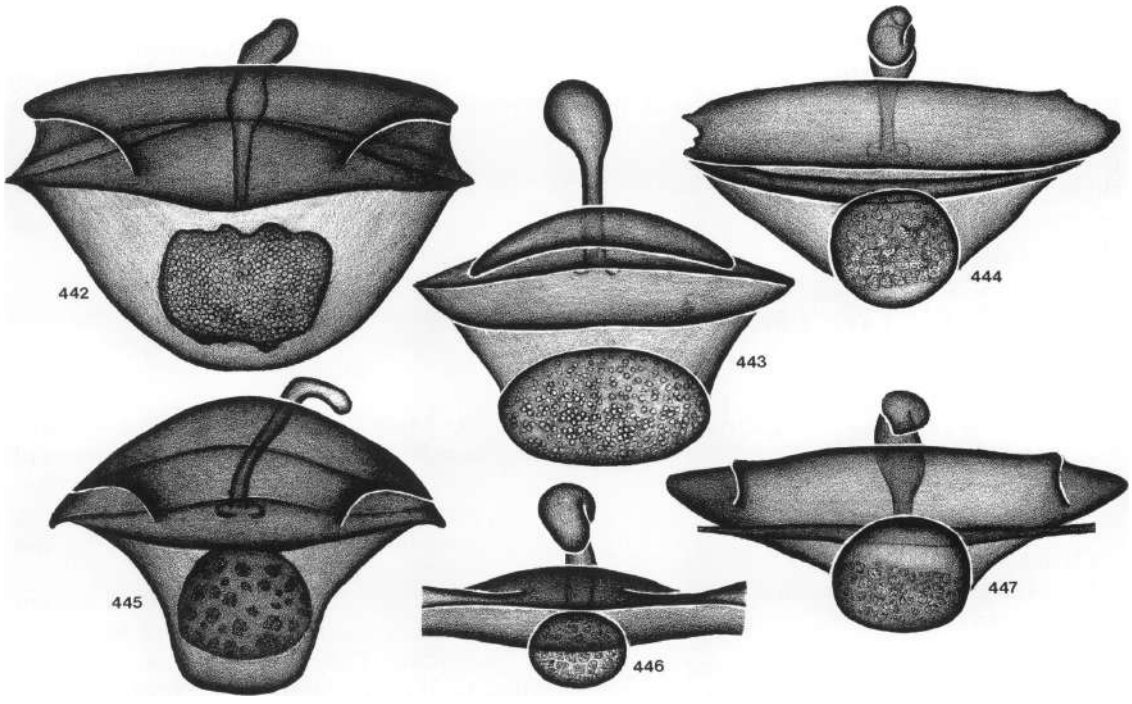




FIGS. 438–441. *Wiltonia graminicola*, new species. 438, 439. Male palp. 440. Bothrium. 441. Proprioreceptor bristle.

DIAGNOSIS: This species seems closely related to *W. graminicola* but can be separated from it by the different abdominal pattern and differences in both the male and female genitalia.

FEMALE: Total length 3.05. Carapace 1.19 long, 0.94 wide. Abdomen 1.93 long, 0.98 wide. Dorsal patterning as in figure 428, abdominal venter with two indistinct bands between spinnerets and posterior spiracles. Leg spination: tibiae III, IV p1-1-2, v0-0-2, r1-1-2; metatarsi III, IV p1-1-2, v0-0-2, r1-1-2. Tarsal organ squat, not as high as wide, with four receptor lobes and only eight marginal lobes (fig. 458). Outer flanges of claws of legs I and II typical, followed by six teeth.



FIGS. 442–447. Female genitalia of *Wiltonia*, from above. 442. *W. graminicola*, new species. 443. *W. porina*, new species. 444. *W. nelsonensis*, new species. 445. *W. lima*, new species. 446. *W. fiordensis*, new species. 447. *W. pecki*, new species.

	I	II	III	IV	Palp
Femur	1.12	1.05	0.94	1.29	0.70
Patella	0.45	0.45	0.42	0.45	0.21
Tibia	0.91	0.91	0.71	0.98	0.21
Metatarsus	0.87	0.84	0.66	1.40	—
Tarsus	0.38	0.38	0.32	0.39	0.28
Total	3.73	3.63	3.05	4.51	1.40

Genitalia (fig. 445) with anterior receptaculum slender, tubular, curved distally; posterior receptaculum with oval poreplate bearing pores grouped on small plates.

MALE: Total length 2.66. Carapace 1.16 long, 0.91 wide. Abdomen 1.57 long, 0.77 wide. As in female except claws with outer flanges extending almost to end, bearing 18 marginal teeth increasing in length distally.

	I	II	III	IV	Palp
Femur	1.08	1.08	0.94	1.22	0.42
Patella	0.42	0.42	0.35	0.43	0.28
Tibia	1.05	0.98	0.74	1.05	0.28
Metatarsus	1.05	0.95	0.70	1.12	—
Tarsus	0.43	0.39	0.38	0.46	0.35
Total	4.03	3.82	3.11	4.28	1.33

Embolic region of bulb broadly flattened (fig. 448) but terminating sharply.

OTHER MATERIAL EXAMINED: Further specimens collected with the types, and swept from foliage at Peel Forest on May 20, 1955, by B. J. Marples (OMD, AMNH).

DISTRIBUTION: Known only from the South Island.

Wiltonia nelsonensis, new species
Figures 431, 444, 459, 461

TYPE: Female holotype sifted from moss on beech forest floor at Donald Creek, Nelson, South Island, New Zealand (May 20, 1979; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name refers to the province in which the type was collected.

DIAGNOSIS: This species can be separated from all others for which females are known by differences in the genitalia and from *W. rotoiti* by the presence of spines on tibiae I and II and the more squat tarsal organ.

FEMALE: Total length 3.20. Carapace 1.80 long, 1.13 wide. Abdomen 1.44 long, 1.08

wide. Pale yellow with weak chevron pattern on abdominal dorsum (fig. 431); tibiae of all legs with darker proximal band. Leg spination: tibiae: I, II v0-0-2; III, IV d0-1-0, p1-1-1, v2-2-2, r1-1-1; metatarsi III, IV d0-1-2, p1-1-2, v2-2-2, r1-1-2. Tarsal organ only slightly higher than wide, with three short receptor lobes (fig. 459). Claws of legs I and II as in figure 461.

	I	II	III	IV	Palp
Femur	1.52	1.44	1.20	1.62	0.48
Patella	0.72	0.60	0.56	0.64	0.23
Tibia	1.12	1.12	0.87	1.23	0.27
Metatarsus	1.04	1.03	0.84	1.20	—
Tarsus	0.44	0.44	0.36	0.48	0.44
Total	4.84	4.63	3.83	5.17	1.42

Genitalia as in figure 444.

MALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Nelson, South Island.

Wiltonia eylesi, new species
Figures 429, 449–451, 456, 464

TYPE: Male holotype taken from litter at Wilmot Pass, Doubtful Sound, Fiordland, South Island, New Zealand (January 21, 1970; A. C. Eyles), deposited in EDA.

ETYMOLOGY: The specific name is a patronym in honor of the collector of the holotype.

DIAGNOSIS: This species can be separated from all others by the abdominal patterning and, in all cases where males are known, by the form of the embolic portion of the bulb.

MALE: Total length 3.20. Carapace 1.52 long, 1.04 wide. Abdomen 1.63 long, 0.96 wide. Dorsal patterning as in figure 429, abdominal venter with two broad bands between spinnerets and posterior spiracles. Leg spination: tibiae III, IV p1-1-1, v0-0-2, r1-1-1; metatarsi: III p1-1-2, v0-0-2, r1-1-2; IV p1-1-2, v0-0-2, r1-2-2. Tarsal organ as high as wide, with row of three short receptor lobes (fig. 456). Claws with large outer flange bearing 20 teeth extending to near tip (fig. 464).

	I	II	III	IV	Palp
Femur	1.44	1.42	1.24	1.63	0.52
Patella	0.60	0.57	0.52	0.60	0.31
Tibia	1.24	1.16	0.92	1.32	0.28
Metatarsus	1.24	1.09	0.89	1.37	—
Tarsus	0.41	0.40	0.37	0.42	0.29
Total	4.93	4.64	3.94	5.34	1.40

Bulb squat, evenly constricted distally to form embolic region; embolus flattened subdistally, one margin weakly serrate before curving back as slender, tubular projection (figs. 449–451).

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Fiordland, South Island.

Wiltonia rotoiti, new species
Figures 465–470

TYPE: Male holotype taken in a window trap in a *Nothofagus* forest at an elevation of 610–650 m at St. Arnaud Track, Lake Rotoiti, Nelson Lake District, South Island, New Zealand (March 24–26, 1980; A. Newton and M. Thayer), deposited in OMD.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species seems closely related to *W. eylesi* but can be readily distinguished by the strikingly different structure of the embolic region of the male palp.

MALE: Total length 3.00. Carapace 1.36 long, 1.04 wide. Abdomen 1.60 long, 0.96 wide. Carapace with pattern behind eyes; abdomen dried, pattern not discernible. Leg spination: tibiae: III d1-1-0, p1-2-0, v0-0-2, r1-1-0; IV p1-1-1, v0-0-2, r1-1-1; metatarsi: III p1-1-2, v0-0-2, r0-0-2; IV d1-1-1, p1-2-2, v0-2-2, r1-2-2. Tarsal organ twice as high as wide, with four relatively large obtuse receptor lobes in row across receptor region (figs. 468, 469). Claws typical for genus (fig. 470).

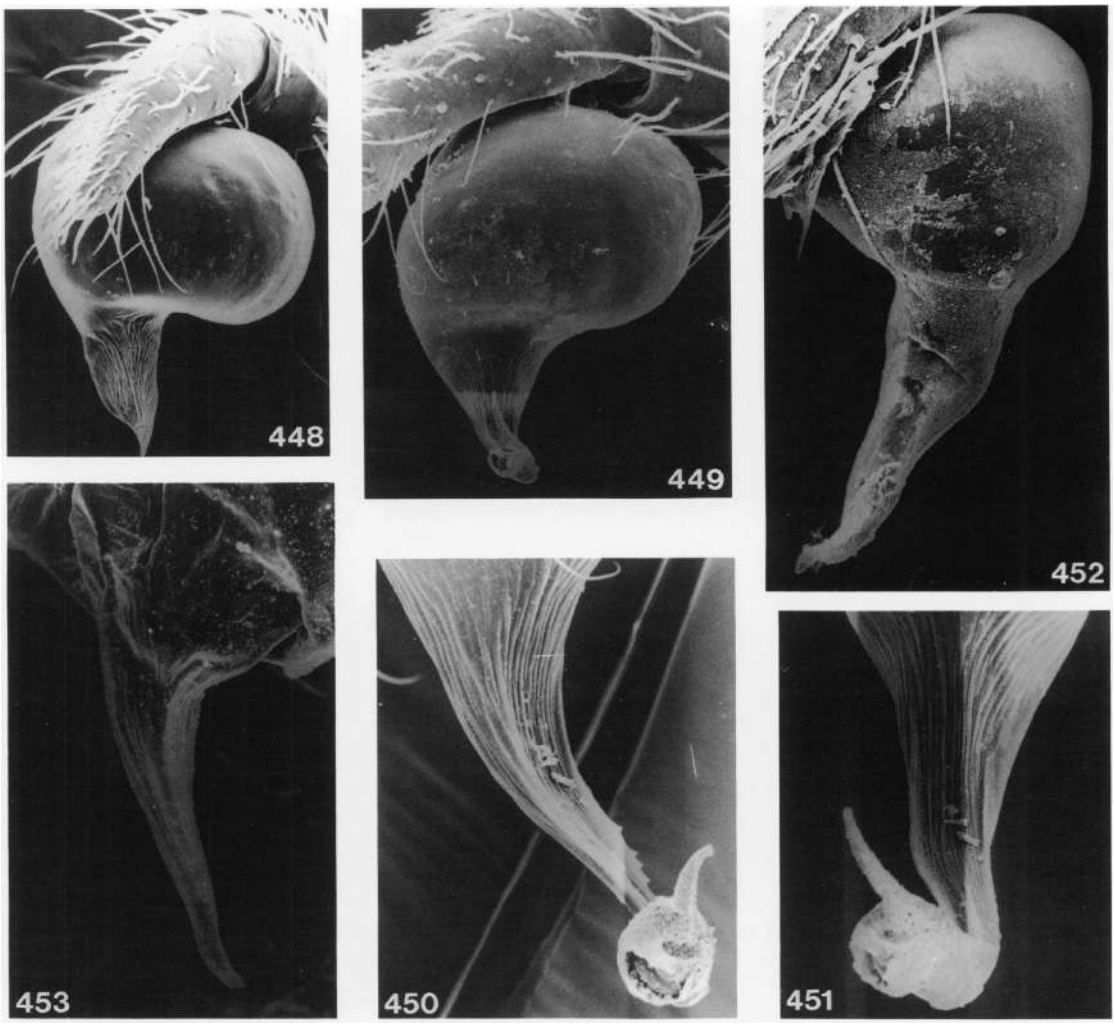
	I	II	III	IV	Palp
Femur	1.20	1.28	1.09	1.52	0.40
Patella	0.52	0.56	0.48	0.56	0.24
Tibia	1.16	1.20	0.84	1.32	0.27
Metatarsus	1.05	1.08	0.93	1.28	—
Tarsus	0.56	0.52	0.40	0.56	0.28
Total	4.49	4.64	3.74	5.24	1.19

Distal portion of embolus produced into transverse bar (figs. 465–467).

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Nelson Lakes District, South Island.



FIGS. 448–453. Male palp of *Wiltonia*. 448. *W. lima*, new species. 449–451. *W. eylesi*, new species. 452. *W. elongata*, new species. 453. *W. porina*, new species.

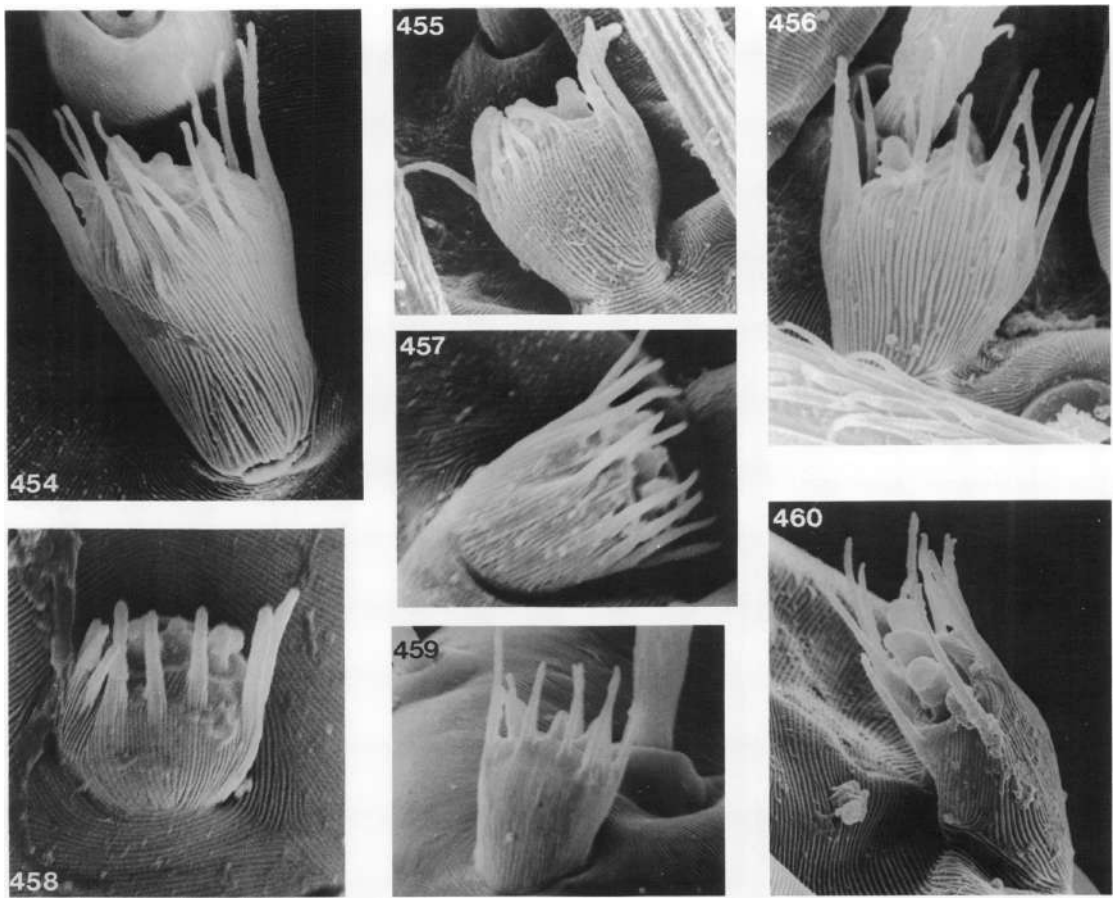
Wiltonia elongata, new species
Figures 425, 452, 455

TYPE: Male holotype collected from litter at Fell Peak, Richmond Range, Nelson, South Island, New Zealand (March 13, 1969; A. C. Eyles), deposited in EDA.

ETYMOLOGY: The specific name refers to the elongate abdomen.

DIAGNOSIS: This species can be separated from all others by the patterning of the abdomen and from all other known males by the shape of the palpal bulb.

MALE: Total length 3.44. Carapace 1.60 long, 1.07 wide. Abdomen 1.88 long, 0.92 wide. Carapace pattern reduced to little more than median patch; dorsal abdominal pattern restricted to posterior half of dorsal surface (fig. 425), venter without pigment except for band encircling spinnerets. Leg spination: tibiae: III p0-1-1, v0-1-2, r0-1-1; IV v1-1-2, r0-1-1; metatarsi: III p1-1-1, v0-0-2, r1-1-1; IV p1-1-2, v1-1-2, r1-1-2. Tarsal organ (fig. 455) squat, as high as wide, with row of three short receptor lobes and nine marginal lobes.



FIGS. 454–460. Tarsal organ of *Wiltonia*. 454. *W. fiordensis*, new species. 455. *W. elongata*, new species. 456. *W. eylesi*, new species. 457. *W. porina*, new species. 458. *W. lima*, new species. 459. *W. nelsonensis*, new species. 460. *W. pecki*, new species.

Claws typical, with 14 teeth lining outer flange.

	I	II	III	IV	Palp
Femur	1.44	1.40	1.28	1.68	0.45
Patella	0.56	0.56	0.48	0.60	0.28
Tibia	1.24	1.24	0.88	1.20	0.35
Metatarsus	1.09	1.12	0.92	1.32	—
Tarsus	0.48	0.44	0.36	0.40	0.35
Total	4.81	4.76	3.92	5.20	1.43

Embolic region of bulb long, evenly narrowing to sharp point (fig. 452).

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Nelson, South Island.

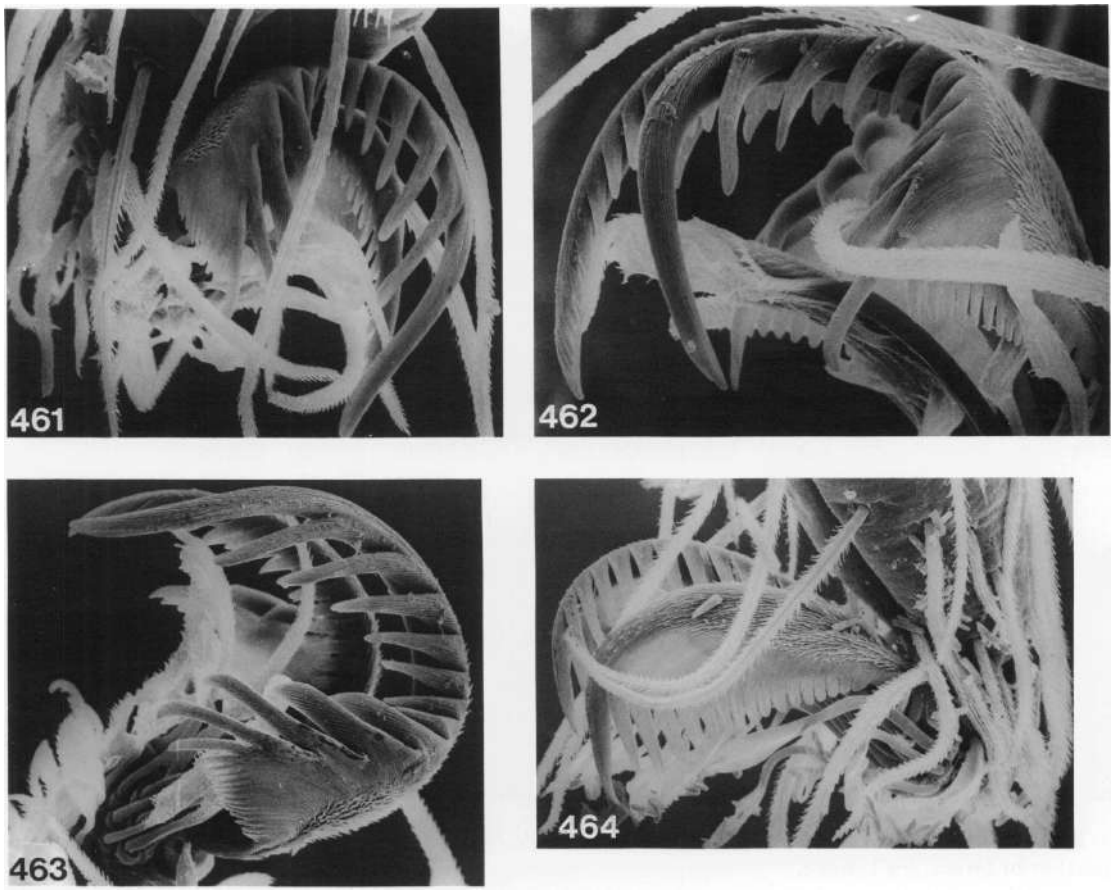
Wiltonia fiordensis, new species
Figures 426, 446, 454, 462

TYPE: Female holotype from litter at an elevation of 750 m at Wilmot Pass, Fiordland, South Island, New Zealand (January 22, 1970; J. S. Dugdale), deposited in EDA.

ETYMOLOGY: The specific name refers to the region where the holotype was collected.

DIAGNOSIS: This species seems closely related to *W. pecki* but can be separated by differences in the female genitalia.

FEMALE: Total length 4.00. Carapace 1.48 long, 1.04 wide. Abdomen 2.40 long, 1.44 wide. Carapace and abdomen patterned as in figure 426; abdominal venter and sternum unpigmented. Leg spination: tibiae: I, II v0-



FIGS. 461–464. Claws of *Wiltonia*. 461. *W. nelsonensis*, new species, leg I, female. 462. *W. fiordensis*, new species, leg I, female. 463. *W. pecki*, new species, leg I, female. 464. *W. eylesi*, new species, leg I, male.

0-2; III, IV p1-1-1, v0-0-2, r1-1-1; metatarsi: III p1-1-2, v0-0-2, r1-1-2; IV d1-1-0, p1-1-2, v0-0-2, r1-1-2. Tarsal organ twice as high as wide, with row of four low receptor lobes (fig. 454) and ring of 13 slender marginal lobes. Claws of legs I and II with typical outer flanges followed by five teeth (fig. 462).

	I	II	III	IV	Palp
Femur	1.32	1.32	1.24	1.60	0.56
Patella	0.48	0.48	0.40	0.56	0.32
Tibia	1.15	1.12	0.92	1.21	0.32
Metatarsus	1.08	1.16	1.00	1.40	—
Tarsus	0.56	0.56	0.48	0.56	0.53
Total	4.59	4.64	4.04	5.33	1.73

Internal genitalia (fig. 446) with secretory pores opening into posterior receptaculum from numerous small plates.

MALE: Unknown.

OTHER MATERIAL EXAMINED: None.

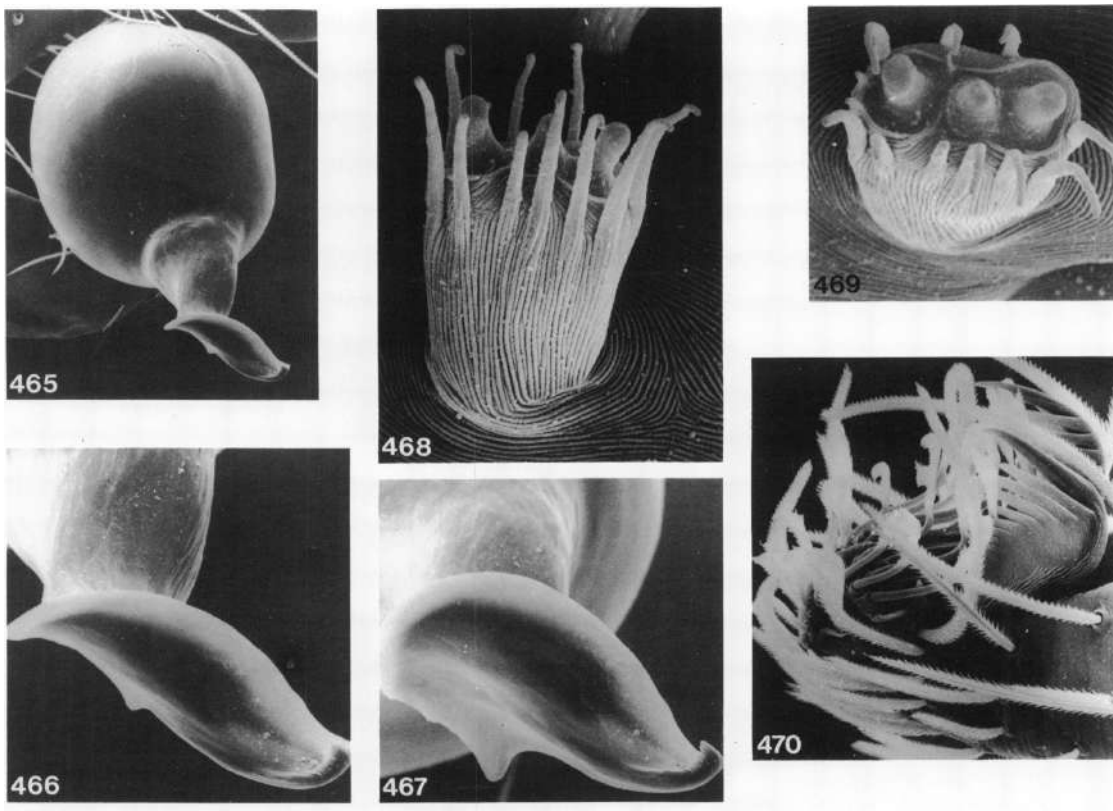
DISTRIBUTION: Known only from Fiordland, South Island.

Wiltonia pecki, new species
Figures 447, 460, 463

TYPE: Female holotype taken in a malaise trap in a beech forest at an elevation of 800 m, 5 miles west of Lewis Pass, South Island, New Zealand (May 17–30, 1982; S. Peck), deposited in OMD.

ETYMOLOGY: The specific name is a patronym in honor of the collector of the holotype.

DIAGNOSIS: This species seems closely related to *W. fiordensis*, which has a similar abdominal pattern and spination, but can be separated by differences in the female genitalia.



FIGS. 465–470. *Wiltonia rotoiti*, new species. 465–467. Male palp. 468, 469. Tarsal organ. 470. Distal portion of tarsus, leg I, male.

FEMALE: Total length 3.63. Carapace 1.52 long, 1.08 wide. Abdomen 2.12 long, 1.20 wide. Carapace and dorsum of abdomen with patterning as in *W. fiordensis*; abdominal venter pale except for two small patches at base of spinnerets; sternum unpigmented. Leg spination: tibiae: I, II v0-0-2; III d0-1-1, p1-1-2, v1-0-2, r1-1-1; IV d0-1-1, p1-1-2, v1-1-2, r0-0-2; metatarsi: III d1-1-1, p2-1-2, v0-0-2, r0-0-2; IV d1-1-1, p1-2-2, v1-1-2, r1-0-2. Tarsal organ relatively long, almost twice as high as wide, with row of four short receptor lobes and 12 marginal lobes (fig. 460). Claws of legs I and II as in figure 463.

	I	II	III	IV	Palp
Femur	1.28	1.28	1.20	1.48	0.52
Patella	0.60	0.60	0.48	0.65	0.28
Tibia	1.12	1.05	0.84	1.24	0.28
Metatarsus	1.00	1.00	0.84	1.20	—
Tarsus	0.57	0.48	0.45	0.52	0.41
Total	4.57	4.41	3.81	5.09	1.49

Internal genitalia (fig. 447) similar to *W. fiordensis* but transverse plates larger, anterior receptaculum shaped differently.

MALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Westland, South Island.

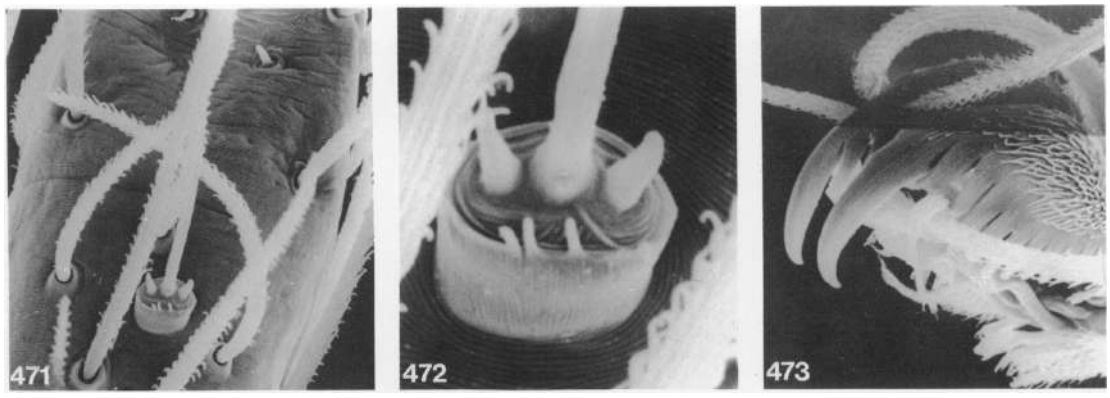
TAUTUKUA, NEW GENUS

TYPE SPECIES: *Tautukua isolata*, new species.

ETYMOLOGY: The generic name is taken from the type locality of the only known species, and is feminine in gender.

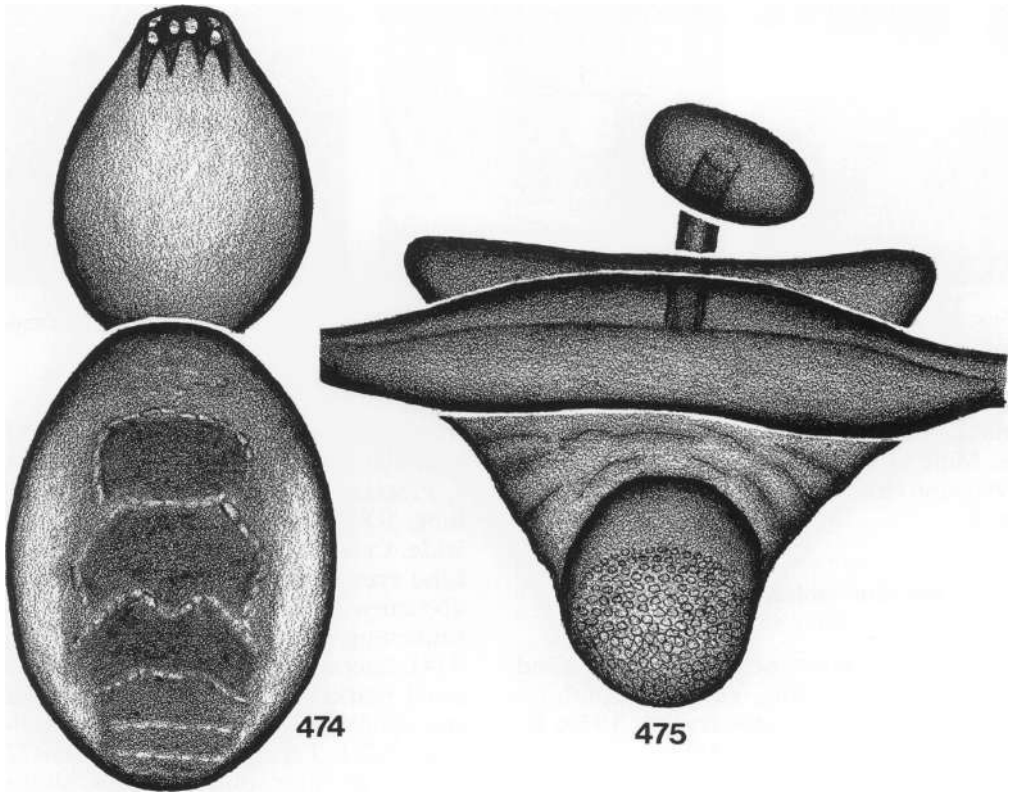
DIAGNOSIS: This genus can be separated from all New Zealand genera with even abdominal shading by the form of the female genitalia and tarsal organ and by the absence of teeth beyond the lateral flange of the claws.

DESCRIPTION: Medium size orsolobids (total length 2.80) with even shading on abdom-

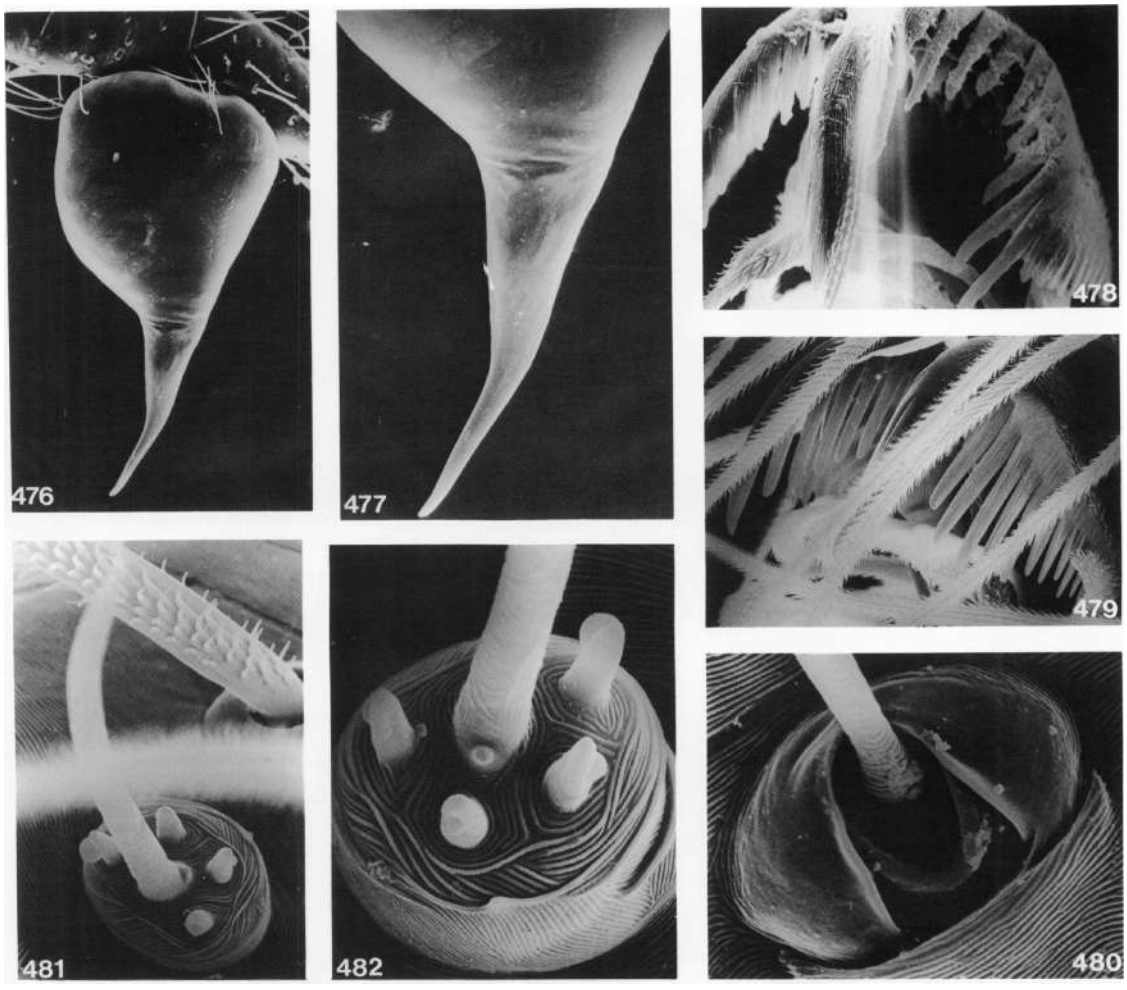


FIGS. 471–473. *Tautukua isolata*, new species. 471, 472. Tarsal organ. 473. Claws, leg I, female.

inal dorsum broken up by thin, transverse, pale lines; without scuta; carapace pattern reduced to area behind eyes. Sternum and colulus typical. Anterior receptaculum of female genitalia with prominent distal sac; posterior receptaculum subdivided so that distinct posterior lobe bears pores of secretory gland. Legs with spines on distal surfaces of tibiae and metatarsi III and IV. Claws with no teeth beyond lateral flange. Basal mound of tarsal organ well defined, with three lobes on posterior margin; long slender median sensory



FIGS. 474, 475. *Tautukua isolata*, new species. 474. Dorsal view of carapace and abdomen of female. 475. Female genitalia, from above.



FIGS. 476–482. *Bealeyia unicolor,* new species. 476, 477. Male palp. 478. Claws, leg I, female. 479. Claws, leg I, male. 480. Trichobothrium. 481, 482. Tarsal organ.

spine flanked by small receptor lobe on each side. Male unknown. Spiracles typical.

DISTRIBUTION: Known only from the South Island.

Tautukua isolata, new species
Figures 471–475

TYPE: Female holotype from litter in mixed coastal forest at Catlins, Tautuku, South Island, New Zealand (February 14, 1979; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name refers to the paucity of available material.

DIAGNOSIS: This species can be separated from all others by the details of the female genitalia.

FEMALE: Total length 2.80. Carapace 1.16 long, 0.88 wide. Abdomen 1.65 long, 1.09 wide. Carapace with indistinct markings behind eyes and shading along lateral margins; abdomen with shaded area down dorsum broken up by thin, pale, transverse lines (fig. 474), lateral surfaces pale, venter with scattered markings; sternum unpigmented. Leg spination: tibiae, metatarsi III, IV p0-0-1, v0-0-2, r0-0-1. Tarsal organ (figs. 471, 472) with median receptor spine very long, almost one-half length of adjacent hairs. Claws with strong lateral flange bearing 12–14 teeth (fig. 473).

	I	II	III	IV	Palp
Femur	1.12	1.04	0.85	1.17	0.40
Patella	0.36	0.39	0.33	0.40	0.20
Tibia	0.96	0.84	0.68	0.96	0.27
Metatarsus	0.80	0.77	0.72	0.88	–
Tarsus	0.36	0.36	0.33	0.42	0.36
Total	3.60	3.40	2.91	3.83	1.23

Genitalia (fig. 475) with distal sac of anterior receptaculum transversely oval; subdivision of posterior receptaculum bearing secretory pores appears thicker than rest of receptaculum; pores grouped evenly over circular area at base of sac.

MALE: Unknown.

OTHER MATERIAL EXAMINED: An immature female collected with the type (OMD).

DISTRIBUTION: South Island.

BEALEYIA, NEW GENUS

TYPE SPECIES: *Bealeyia unicolor*, new species.

ETYMOLOGY: The generic name is based on the type locality of the single known species and is feminine in gender.

DIAGNOSIS: The combination of uniform abdominal pigmentation, a T-shaped anterior receptaculum of the female genitalia, a tarsal organ with five receptor lobes, and sexual dimorphism in claw structure separates *Bealeyia* from all other genera.

DESCRIPTION: Medium size orsolobids (total length 2.8–3.6) with extensive carapace pattern and uniform abdominal pigmentation, without scuta. Eyes subequal, laterals contiguous, separated from PME by less than ALE diameter; ALE sloping down anterior face of carapace so that eyes are directed forward. Chelicerae with two teeth on each margin. Sternum and colulus typical. Female genitalia with prominent T-shaped anterior receptaculum. Spines limited to tibiae and metatarsi III and IV but not restricted to distal surfaces. Claws strongly dimorphic on outer margins of legs I and II: lateral flange of females with triangular flap followed by numerous teeth, males with fewer teeth, all associated with flange. Tarsal organ without marginal lobes, with five receptors, one long; bothria smooth (fig. 480). Palpal bulb simple, pyriform. Spiracles typical.

DISTRIBUTION: Known only from Arthur's Pass, Westland, South Island.

DISCUSSION: The single species on which this genus is based presents a range of characters generally found separately in other genera. It is probable that as the family becomes better known, most of these characters will be considered plesiomorphic at a surprising level. There can be little doubt that the fuller spination of the legs (which also occurs in *Wiltonia*) is plesiomorphic. The sexual dimorphism shown in the lateral flanges of the claws of the first two pairs of legs also occurs in other quite different genera (e.g., *Wiltonia, Subantarctia, Waipoua*) as well as some of the Australian and Chilean genera. The simplicity of the palpal bulb provides no useful comparative information but the female genitalia show a remarkable similarity to the organ found in a number of species in the chevroned genus *Ascuta* (e.g., *A. rangipo, A. univa*).

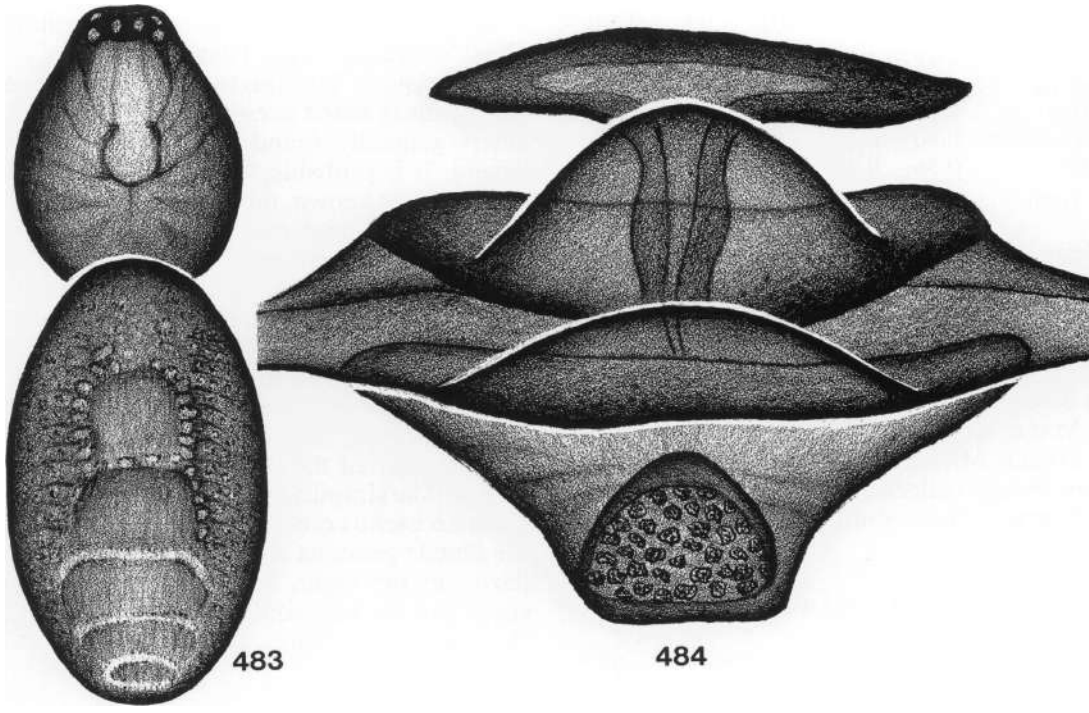
Bealeyia unicolor, new species
Figures 476–484

TYPES: Male holotype and female paratype collected from moss on *Nothofagus* forest floor along track to Bealey Valley, Arthur's Pass, South Island, New Zealand (February 22, 1984; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name refers to the even pigmentation of the abdomen.

DIAGNOSIS: The structure of the female genitalia and the presence of five receptor spines on the tarsal organ characterize this species.

MALE: Total length 2.88. Carapace 1.37 long, 1.04 wide. Abdomen 1.56 long, 0.92 wide. Pigmentation of dorsum as in figure 483; carapace fully patterned, with marginal shading; abdominal venter shaded except for two thin, pale lines between spinnerets and posterior spiracles; sternum unpigmented. Leg spination: tibiae: III p1-1-1, v0-0-2; IV p1-1-1, v0-1-2, r1-1-1; metatarsi: III d0-0-2, p1-1-2, v0-1-2, r1-1-2; IV d0-0-2, p1-2-2, v1-1-2. Tarsal organ (figs. 481, 482) with long receptor spine bearing small secondary lobe at base and four small spines; marginal lobes absent. Claws with 14 or 15 slender teeth along outer margin (fig. 479).



FIGS. 483, 484. *Bealeyia unicolor*, new species. 483. Dorsal view of carapace and abdomen of female. 484. Female genitalia, from above.

	I	II	III	IV	Palp
Femur	1.44	1.40	1.21	1.64	0.43
Patella	0.52	0.52	0.43	0.55	0.32
Tibia	1.24	1.16	0.92	1.32	0.36
Metatarsus	1.24	1.16	1.00	1.52	—
Tarsus	0.60	0.60	0.48	0.58	0.28
Total	5.04	4.84	4.04	5.61	1.39

Palpal bulb (figs. 476, 477) simple, narrowing evenly distally.

FEMALE: Total length 3.52. Carapace 1.36 long, 1.08 wide. Abdomen 2.08 long, 1.36 wide. Coloration, leg spination, and tarsal organ as in male. Outer margin of claws with distinct triangular basal flange bearing 14 fused teeth along posterior face, followed by two long teeth; row of 18–20 separate teeth extends along outer margin to tip of claw (fig. 478).

	I	II	III	IV	Palp
Femur	1.28	1.28	1.08	1.60	0.36
Patella	0.52	0.52	0.45	0.57	0.29
Tibia	1.16	1.13	0.80	1.24	0.28
Metatarsus	1.12	1.08	1.04	1.40	—
Tarsus	0.48	0.45	0.40	0.52	0.48
Total	4.56	4.46	3.77	5.33	1.41

Genitalia strongly developed, with prominent T-shaped anterior receptaculum and short but distinct posterior receptaculum; secretory pores restricted to well-defined subtriangular plate near posterior extremity of receptaculum, pores distributed over plate in groups; transverse muscle plates broad (fig. 484).

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from the South Island.

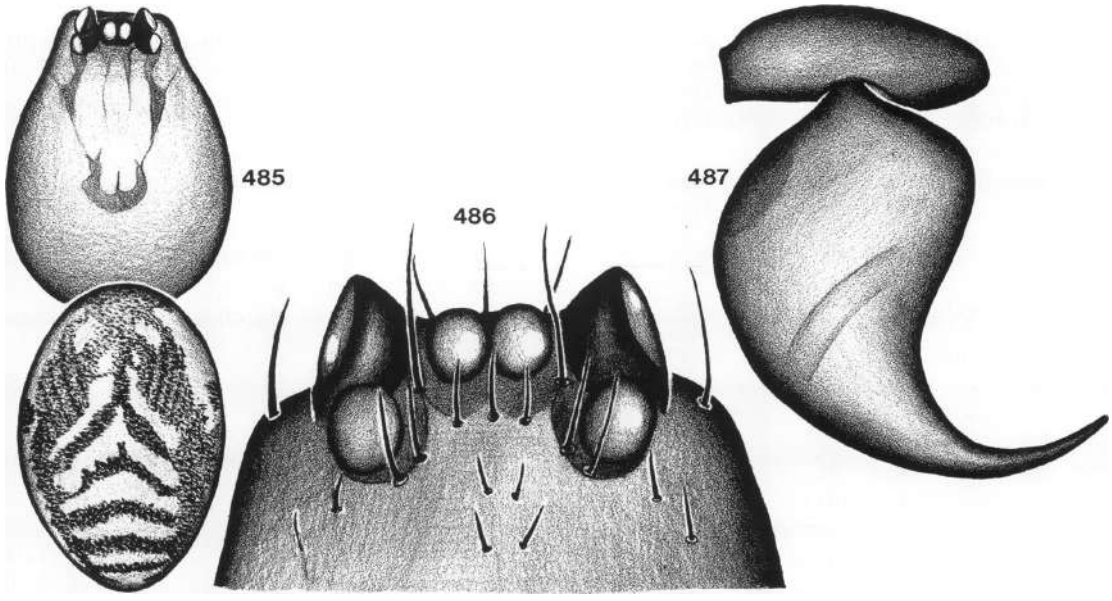
DUGDALEA, NEW GENUS

TYPE SPECIES: *Dugdalea oculata*, new species.

ETYMOLOGY: The generic name is in honor of J. S. Dugdale, in recognition of his long-standing efforts to bring about a fuller understanding of the New Zealand arthropod fauna, and is feminine in gender.

DIAGNOSIS: This genus can be separated from all others with a chevron patterned abdomen by the large anterior lateral eyes set in raised cups.

DESCRIPTION: Medium size (total length



FIGS. 485–487. *Dugdalea oculata*, new species. 485. Dorsal view of carapace and abdomen of male. 486. Eyes viewed with head tilted down in relation to figure 485. 487. Male palp.

2.48) orsolobids with pigment pattern on carapace and strong chevron pattern on abdominal dorsum, without scuta. ALE distinctly larger than other eyes, housed in raised cup; lateral eyes subcontiguous, separated from PME by more than ALE diameter; posterior margin of PME even with anterior margin of PLE (fig. 486). Chelicerae with two teeth on each margin. Sternum and colulus typical. Female unknown. Legs with spines on distal prolateral, ventral, and retrolateral surfaces of tibiae and metatarsi III and IV. Claws with prominent lateral flange, teeth limited to flange. Tarsal organ with two receptor spines, one as long as height of basal mound; margin of mound with slender lobes. Male palpal bulb simple, with spiniform embolus. Spiracles typical.

DISTRIBUTION: Southwest Nelson, South Island.

Dugdalea oculata, new species
Figures 485–487

TYPE: Male holotype from Berlese sample of moss and litter taken at Fletcher's Creek, Inangahua, Nelson, South Island, New Zealand (September 10, 1972; J. S. Dugdale), deposited in EDA.

ETYMOLOGY: The specific name refers to the unusual eye group.

DIAGNOSIS: Although simple, the shape of the male bulb is distinctive and separates the species from all other chevroned orsolobids.

MALE: Total length 2.48. Carapace 1.20 long, 0.87 wide. Abdomen 1.28 long, 0.69 wide. Carapace with pattern between eyes and median patch; abdomen with distinct dorsal chevrons flanked by continuous bands (fig. 485), venter unpigmented except for two patches in front of spinnerets and two over posterior spiracles; sternum with three intercoxal patches on each margin and longitudinal band down midline. Leg spination: tibiae III, IV p0-0-1, v0-0-2, r0-0-1; metatarsi III, IV p0-0-2, v0-0-2, r0-0-2. Tarsal organ with two receptor spines, one small, other as long as height of basal mound; margin with 10 or 11 slender lobes. Lateral flange of claws with 12 teeth.

	I	II	III	IV	Palp
Femur	0.88	0.76	0.74	1.05	0.56
Patella	0.47	0.42	0.42	0.48	0.40
Tibia	0.75	0.68	0.56	0.76	0.40
Metatarsus	0.64	0.64	0.48	0.81	—
Tarsus	0.40	0.40	0.37	0.41	0.37
Total	3.14	2.90	2.57	3.51	1.73

Palpal bulb simple, evenly narrowing from basal sac and curving forward (fig. 487).

FEMALE: An immature specimen, probably female, has been examined from the type locality. It resembles the type in somatic structures, including the unusual eye group.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Southwest Nelson, South Island.

ANOPSOLOBUS, NEW GENUS

TYPE SPECIES: *Anopsolobus subterraneus*, new species.

ETYMOLOGY: The generic name refers to the absence of eyes, and is masculine in gender.

DIAGNOSIS: This genus can immediately be separated from all other known orsolobids by the absence of eyes and the presence of a dentate flange on both margins of the claws. It is probably closely related to *Tangata*, but can be separated also by the absence of abdominal pigmentation and by the form of the tarsal organ.

DESCRIPTION: Small (total length 1.96), unpigmented, eyeless orsolobids; abdomen without scuta, densely clothed with short even hairs. Chelicerae projecting forward, paturon narrowed at two-thirds its length where teeth displaced to form single row of four teeth, distal tooth strongest, widely separated from proximal group of three. Sternum typical. Colulus small with few hairs (probably three). Female genitalia with simple posterior receptaculum and distally expanded anterior receptaculum. Legs with spines on distal surfaces of tibiae and metatarsi III and IV. Claws with extensive dentate outer flange, teeth limited to flange; inner margin with short, dentate flange between normal teeth; few spatulate hairs present below claws. Tarsal organ with long receptor spines and three small lobes grouped at base; basal mound low with two marginal lobes; bothria with smooth hood, three trichobothria on tibiae, one subdistally on metatarsi; proprioreceptor bristles smooth, distally bifurcate (fig. 490). Male unknown. Spiracles typical.

DISTRIBUTION: Known only from Nelson, South Island.

DISCUSSION: The lack of pigment and the absence of eyes in themselves do not necessarily separate the genus from *Tangata*, in which the female genitalia are similar, but the structure of the claws and form of the tarsal organ support the generic separation.

Anopsolobus subterraneus, new species
Figures 488–493, 559

TYPE: Female holotype collected in a trap set 4 m down a bore during a period of low water table at Brightwater, Nelson, South Island, New Zealand (March 17, 1972; G. Kuschel), deposited in EDA.

ETYMOLOGY: The specific name refers to the habitat in which the holotype was collected.

DIAGNOSIS: The form of the female genitalia, tarsal organ, and tarsal claws is diagnostic.

FEMALE: Total length 1.96. Carapace 0.91 long, 0.64 wide. Abdomen 1.08 long, 0.60 wide. Carapace and appendages pale yellow, abdomen cream. Leg spination: tibiae III, IV p0-0-1, v0-0-2, r0-0-1; metatarsi III, IV p0-0-2, v0-0-2, r0-0-2. Tarsal organ as in figures 488, 489. Outer flange of claws large, extending almost full length of claw, provided with 15 teeth; inner margin with four normal teeth followed by flange composed of 10 or 11 fused teeth, terminated with two further normal teeth (figs. 491–493).

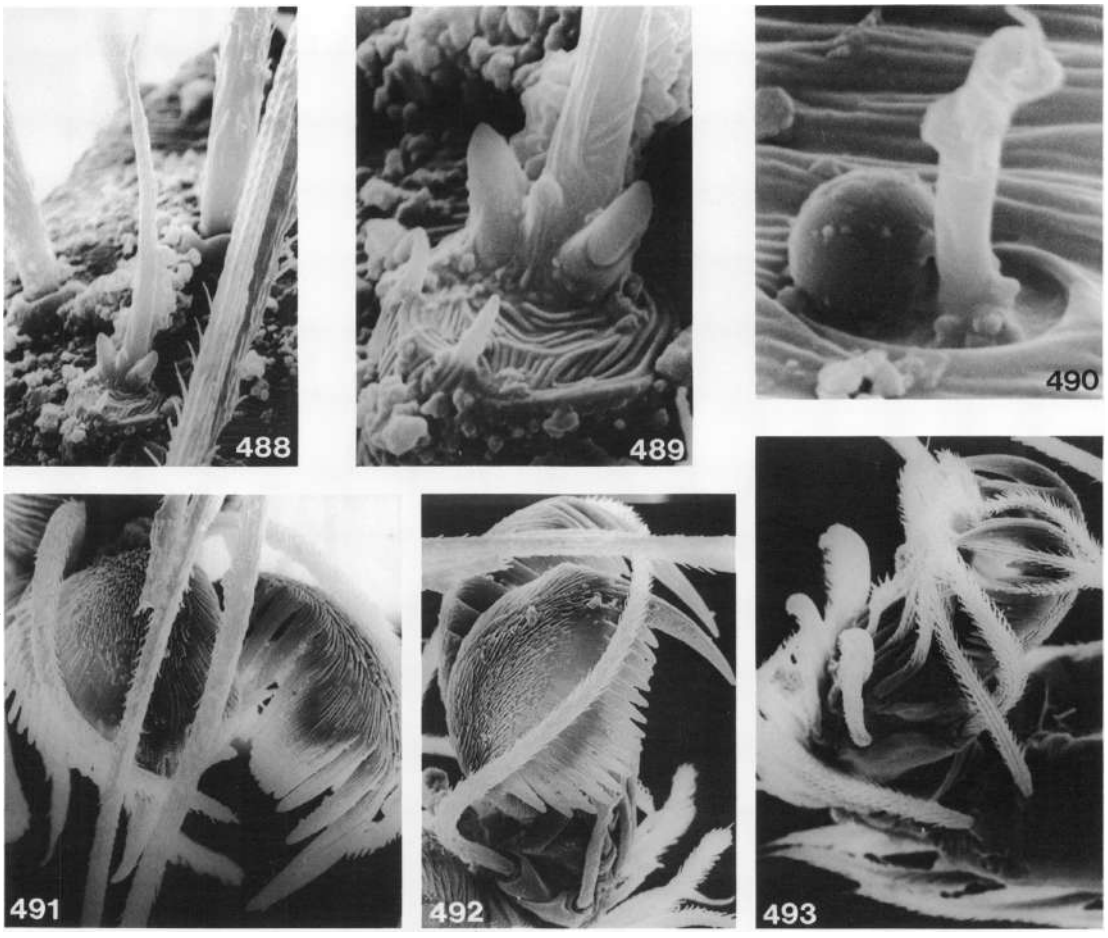
	I	II	III	IV	Palp
Femur	0.68	0.68	0.60	0.84	0.24
Patella	0.31	0.35	0.31	0.36	0.16
Tibia	0.68	0.61	0.44	0.71	0.21
Metatarsus	0.56	0.56	0.41	0.56	—
Tarsus	0.32	0.32	0.27	0.35	0.27
Total	2.55	2.52	2.03	2.82	0.88

Genitalia (fig. 559): anterior receptaculum straight tube, expanded distally; posterior receptaculum typical saclike organ with secretory pores limited to posterior surface.

MALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: The single known specimen was collected along with a number of interstitial terrestrial arthropods in a trap set 4 m down an artesian bore in Nelson, South Island. The purpose of the trap was to collect aquatic animals but during the period the trap was set the water table receded (leaving the trap dry), resulting in the completely unex-



FIGS. 488–493. *Anopsolobus subterraneus*, new species. 488, 489. Tarsal organ. 490. Proprioreceptor bristle; spherical object is an artifact. 491–493. Claws, leg II, female.

pected haul of a terrestrial interstitial fauna. Only a single spider was collected and further attempts to gather additional material were unsuccessful. The fact that a nonaquatic interstitial fauna is present in New Zealand has long been suspected because of the occasional discovery of lightly pigmented arachnids (both spiders and harvestmen) with reduced eyes during surface collecting, but this species is the first unequivocal record from the habitat.

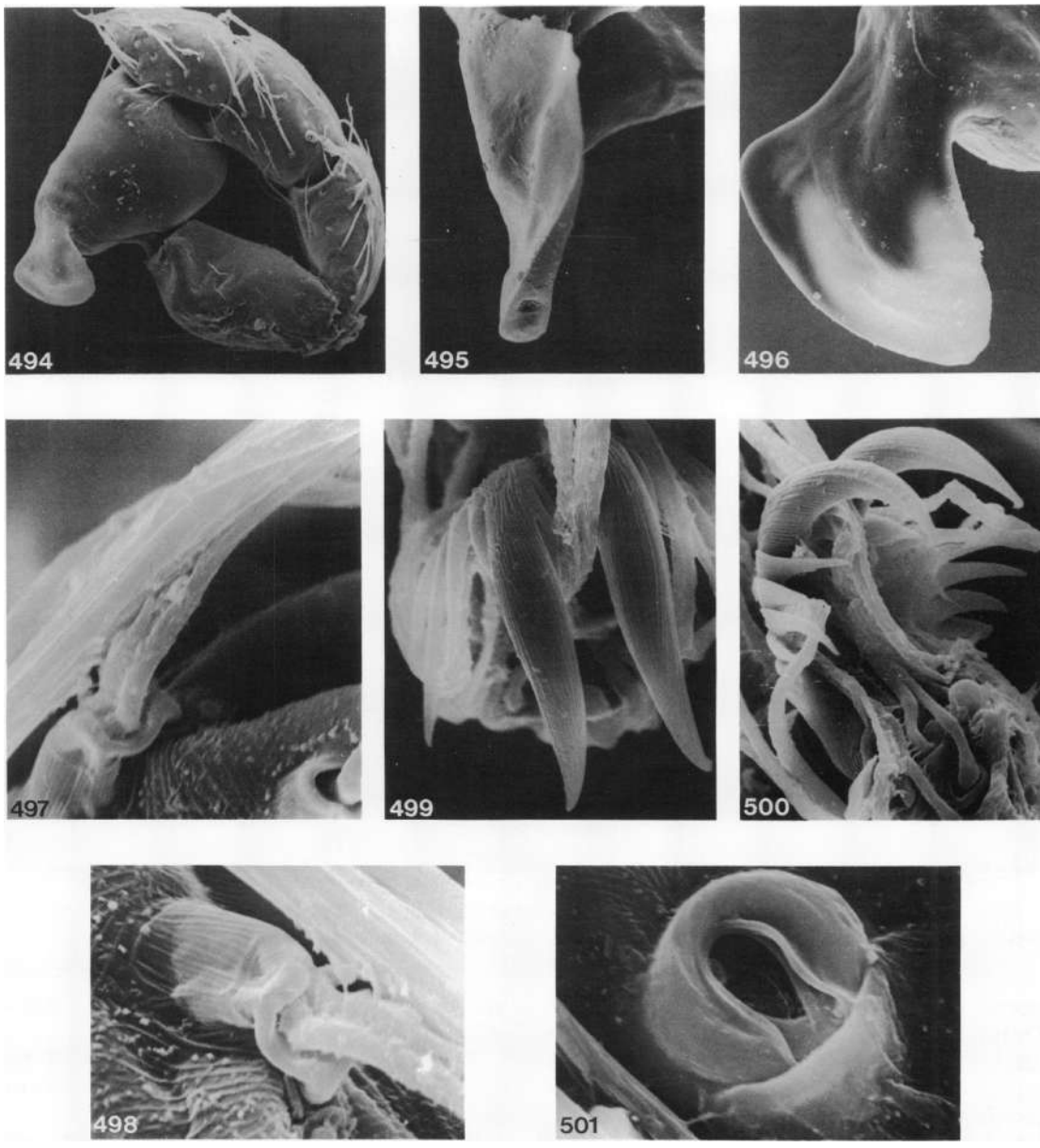
TURRETIA, NEW GENUS

TYPE SPECIES: *Turretia dugdalei*, new species.

ETYMOLOGY: The generic name is derived from the name of the mountain range where the type species was collected, and is feminine in gender.

DIAGNOSIS: *Turretia* is characterized by slender legs and the absence of a prominent lateral flange on the claws.

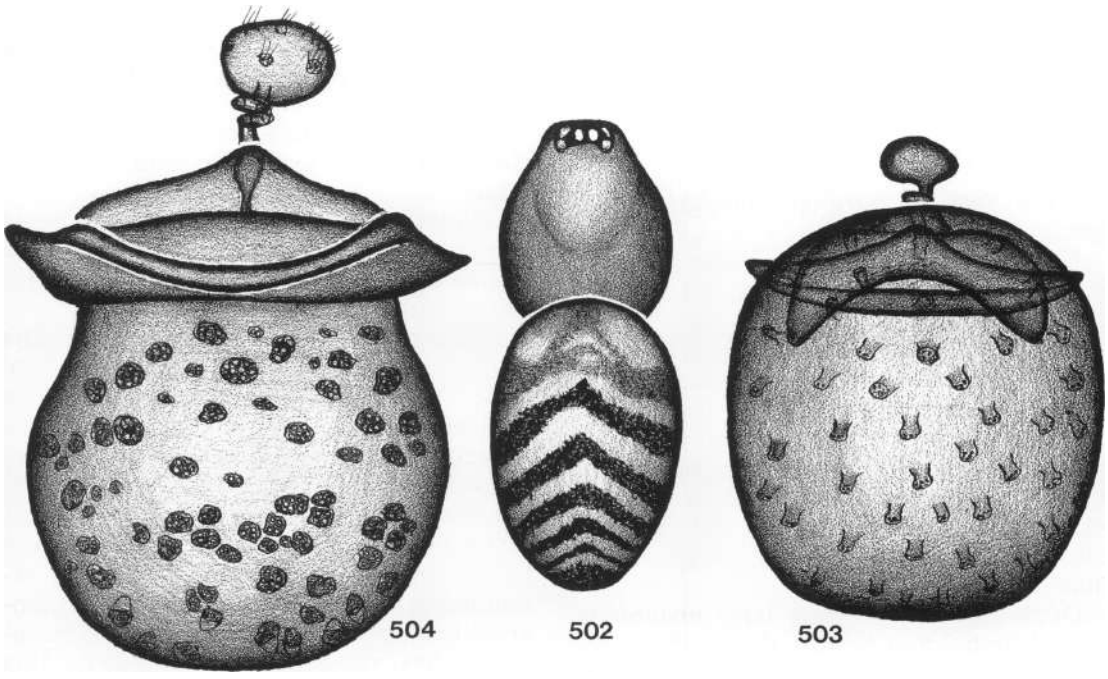
DESCRIPTION: Small (total length 1.84), unpigmented orsolobids with relatively long, slender legs clothed with longitudinally ridged, weakly plumose hairs similar to those found in some ochyroceratids, without scuta. Eyes equal in width with PME set slightly behind ALE. Chelicerae relatively long (slightly longer than carapace), slender, with two teeth on each margin. Sternum typical. Colulus minute, with few hairs. Female unknown. Legs with distal spines on tibiae and metatarsi III and IV. Claws not strongly flat-



FIGS. 494–501. *Turretia dugdalei*, new species. 494–496. Male palp. 497, 498. Tarsal organ. 499, 500. Claws, leg I, male. 501. Bothrium.

tened, with only five outer teeth originating from claw proper rather than lateral flange; inner margin with five teeth; bunch of typical spatulate hairs present below claws. Tarsal organ base higher than wide, lacking marginal cuticular projections; two receptor spines, one long; bothria with smooth hood extending down to anterior margin (fig. 501), three trichobothria on tibiae, one on metatarsi. Segments of male palp stout; bulb relatively large, simple, embolus expanded to form prominent thin flap. Spiracles typical.

DISTRIBUTION: Known only from the South Island.



FIGS. 502–504. Structure of *Orongia*. 502, 503. *O. motueka*, new species. 504. *O. medialis*, new species. 502. Dorsal view of carapace and abdomen of female. 503, 504. Female genitalia, from above.

DISCUSSION: The single known species has the general appearance of an ochyroceratid, an impression enhanced by the form of the hairs. However, the presence of paired posterior spiracles, doubly pectinate claws, an orsolobid tarsal organ, and the form of the bothria confirm the placement of the species in the Orsolobidae. Although the type species was collected from a subalpine herb field, the lack of pigment, the slender legs, and the thin cuticle suggest that the genus could be primarily interstitial (as in *Anopsolobus*).

Turretia dugdalei, new species
Figures 494–501

TYPE: Male holotype collected from herb mats and grass at an elevation of 1200 m on Mount Gray, Turret Range, Otago, South Island, New Zealand (January 14, 1970; J. S. Dugdale), deposited in EDA.

ETYMOLOGY: The specific name is a patronym in honor of the collector of the holotype.

DIAGNOSIS: This species is notable for the lack of pigment, the thin cuticle, and the distinctive form of the palpal bulb and tarsal organ.

MALE: Total length 1.84. Carapace 0.83 long, 0.59 wide. Abdomen 0.88 long, 0.60 wide. Abdomen pale straw yellow with thin cuticle. Leg spination: tibiae III, IV v0-0-2; metatarsi III, IV p0-0-2, v0-0-2, r0-0-2. Tarsal organ (figs. 497, 498) with elongate base tubercle almost twice as high as wide, lacking cuticular lobes; two receptor spines, one long. Claws narrow for family, with five slender teeth on outer margin increasing in length distally, lateral flange rudimentary; five inner teeth, uniform in length; eight typical long-stemmed spatulate hairs present immediately below claws (figs. 499, 500).

	I	II	III	IV	Palp
Femur	0.68	0.52	0.47	0.71	0.23
Patella	0.23	0.24	0.20	0.28	0.16
Tibia	0.47	0.44	0.36	0.64	0.16
Metatarsus	0.47	0.41	0.31	0.31	—
Tarsus	0.32	0.32	0.29	0.32	0.13
Total	2.17	1.93	1.63	2.26	0.68

Segments of male palp stout (fig. 494), bulb simple but with distal portion of embolus expanded into thin flap; sperm duct opening distally (figs. 495, 496).

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from the South Island.

ORONGIA, NEW GENUS

TYPE SPECIES: *Orongia medialis*, new species.

ETYMOLOGY: The generic name is an arbitrary combination of letters and is masculine in gender.

DIAGNOSIS: *Orongia* can be separated from all other New Zealand genera by the form of the female genitalia, particularly the presence of lobes bearing the secretory pores in the posterior receptaculum. This character may relate the genus to the Australian *Tasmanoonops*, from which it can be separated by the presence of four cheliceral teeth rather than two.

DESCRIPTION: Relatively large orsolobids (total length 2.8–4.2) with abdominal chevron pattern, without scuta; carapace pattern reduced or absent. Chelicerae with two teeth on each margin. Sternum typical. Colulus small, with few (usually five) hairs. Female genitalia with spherical anterior receptaculum, duct leading to bursa twisted; posterior receptaculum large, with secretory pores aggregated on irregular plates, at least some plates associated with lobes projecting into lumen. Leg spination: tibiae III, IV p0-0-1, v0-0-2, r0-0-1; metatarsi III, IV distal ring of 12 spines. Claws with prominent lateral flange, teeth limited to flange; thick pad of spatulate hairs present below claws. Tarsal organ with two receptor spines, one long; marginal lobes few or absent; bothria with hood indented around margin (fig. 517). Palpal bulb with embolic region modified but without separate sclerites. Spiracles typical.

DISTRIBUTION: The genus appears to be restricted to the northwest tip of the South Island and the eastern side of the southern extremity of the North Island—a distribution that is repeated in many groups of terrestrial arthropods.

Orongia medialis, new species
Figures 504, 508–513

TYPES: Female holotype and male paratype taken in pitfall traps at Orongorongo Valley, Wellington, North Island, New Zealand (female, March 1974, Ecology Division Survey; male, November 1975, A. Moed), deposited in OMD.

ETYMOLOGY: The specific name refers to the geographical location within New Zealand.

DIAGNOSIS: This species can be separated from *O. motueka* by differences in the female genitalia and from *O. whangamoa* by the different form of the male palpal bulb.

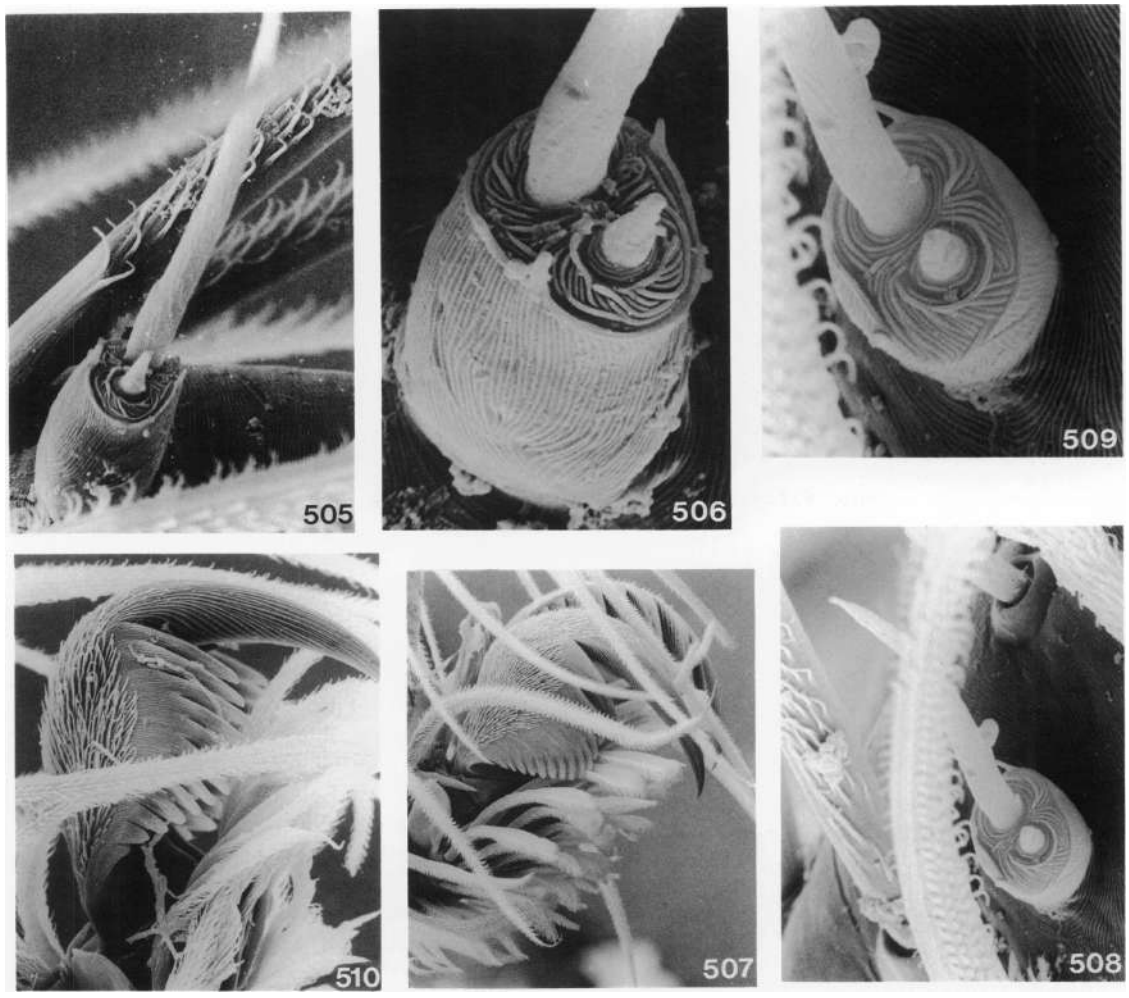
FEMALE: Total length 4.16. Carapace 2.04 long, 1.52 wide. Abdomen 2.32 long, 1.20 wide. Abdominal pattern undiscernible on any specimens examined (all macerated due to lack of proper preservative in pitfall traps, but some pigment present); carapace patterning clear, with distinct median patch and less distinct markings extending to eyes; sternum with three marginal intercoxal patches extending to midline, linking with median longitudinal band. Tarsal organ with two receptor spines, outer stout, erect, extending approximately six times height of basal mound (figs. 508, 509). Claws with 12 teeth on lateral flange (fig. 510).

	I	II	III	IV	Palp
Femur	1.96	1.92	1.60	2.20	0.64
Patella	0.80	0.73	0.52	0.76	0.40
Tibia	1.64	1.65	1.29	1.80	0.40
Metatarsus	1.64	1.64	1.36	1.92	—
Tarsus	0.72	0.72	0.64	0.76	0.64
Total	6.76	6.66	5.41	7.44	2.08

Genitalia (fig. 504): anterior receptaculum with spherical distal sac, secretory gland discharging through pores grouped on few irregularly spaced plates, duct from sac to bursa coiled; posterior receptaculum large, with numerous irregular plates, each bearing pores, some plates on posterior portion of sac indented as in *O. motueka*.

MALE: Carapace 1.62 long, 1.23 wide. Abdomen missing. Somatic characters as in female.

	I	II	III	IV	Palp
Femur	1.60	1.52	1.28	—	0.48
Patella	0.49	0.48	0.40	—	0.29
Tibia	1.40	1.32	1.00	—	0.29
Metatarsus	1.32	1.24	1.04	—	—
Tarsus	0.64	0.64	0.60	—	0.32
Total	5.45	5.20	4.32	—	1.38



FIGS. 505–510. Structure of *Orongia*. 505–507. *O. motueka*, new species. 508–510. *O. medialis*, new species. 505, 506, 508, 509. Tarsal organ. 507, 510. Claws and claw tuft, leg I, female.

Palpal bulb (figs. 511–513) as wide as long, with embolic region relatively short, stout, flattened distally where duct opens from short apical projection; single row of seven small, sharp denticles present along ventral surface.

OTHER MATERIAL EXAMINED: Fragmentary material representing 12 or 13 specimens collected in the same pitfall series from which the type specimens were selected (OMD).

DISTRIBUTION: Known only from forest near Wellington, North Island.

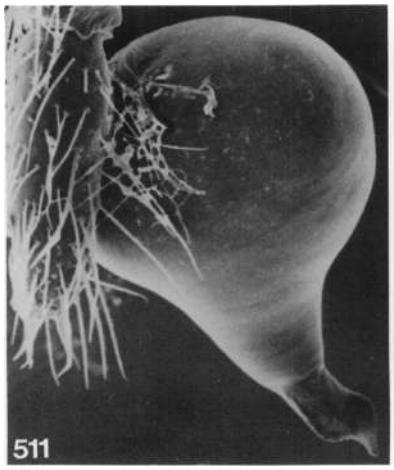
Orongia motueka, new species
Figures 502, 503, 505–507

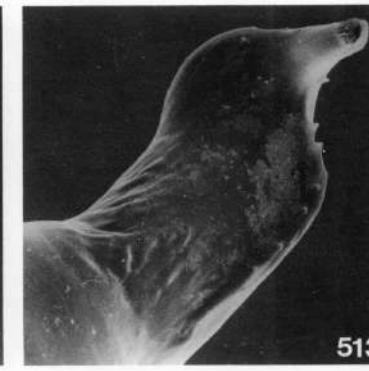
TYPE: Female holotype from Harwood Track, Motueka, Nelson, South Island, New Zealand (May 1982; S. and J. Peck), deposited in OMD.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species can be separated from *O. medialis* by differences in the female genitalia and from *O. whangamoa* by the larger size and differences in the tarsal organ.

FEMALE: Total length 4.96. Carapace 2.08 long, 1.40 wide. Abdomen 2.82 long, 1.84 wide. Carapace and sternum unpigmented; dorsal abdominal patterning as in figure 502, chevrons extending down lateral margins, venter unpigmented except for patches near posterior spiracles. Tarsal organ and claws similar to *O. medialis* (figs. 505–507).





FIGS. 511–513. *Orongia medialis*, new species, male palp.

	I	II	III	IV	Palp
Femur	—	2.00	—	—	—
Patella	—	0.81	—	—	—
Tibia	—	1.63	—	—	—
Metatarsus	—	1.69	—	—	—
Tarsus	—	0.76	—	—	—
Total	—	6.89	—	—	—

Genitalia (fig. 503) similar to *O. medialis* but muscle plates differently shaped and secretory gland enclosing posterior receptaculum discharging through indented cups bearing pores on inner surface as in Australian *Tasmanoonops*.

MALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Nelson, South Island.

NOTE: This species is based on a single, damaged specimen that retained only one leg, but sufficient characters are detectable to allow description. The form of the posterior receptaculum is particularly noteworthy because of the similarity of the secretory pore cups to those found in the Australian genus *Tasmanoonops*. The partial development of these structures in the related North Island species *O. medialis* suggests that the cups developed independently in *Orongia*.

Orongia whangamoa, new species
Figures 514–519

TYPE: Male holotype taken in a pitfall trap at Whangamoa, Nelson, South Island, New Zealand (November 17, 1966; J. I. Townsend), deposited in EDA.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

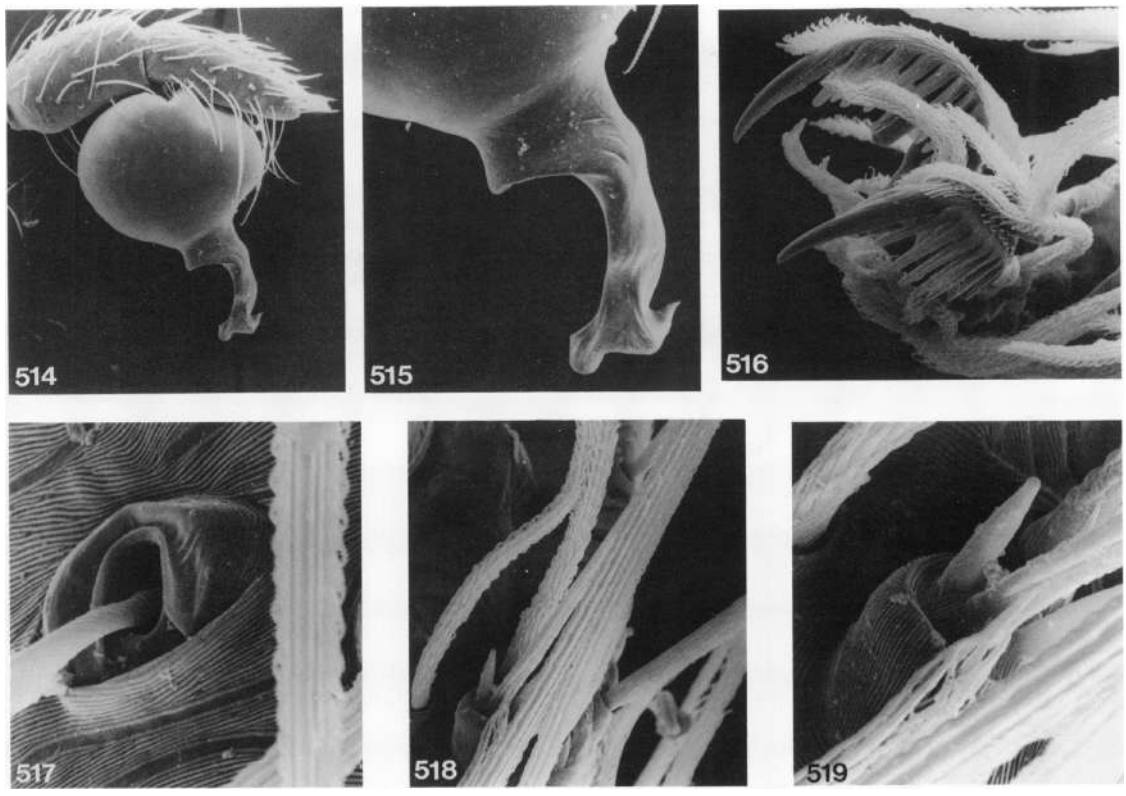
DIAGNOSIS: This species can be distinguished from both *O. medialis* and *O. motueka* by its smaller size and the more weakly developed lateral flange on the claws, and from the male of *O. medialis* by the different shape of the embolus.

MALE: Total length 2.80. Carapace 1.21 long, 0.96 wide. Abdomen 1.52 long, 0.92 wide. Specimen partially macerated, bleached, with no trace of pigmentation on carapace or sternum but distinct traces on anterodorsal and ventral surfaces of abdomen, suggesting that in life spiders have chevron pattern. Tarsal organ typical (figs. 518, 519), basal mound without marginal lobes. Lateral flange of claws (fig. 516) not as strongly developed as in other two species, teeth relatively longer.

	I	II	III	IV	Palp
Femur	1.20	1.20	1.04	1.36	0.44
Patella	0.52	0.52	0.42	0.48	0.25
Tibia	1.08	1.05	0.92	1.20	0.28
Metatarsus	1.05	1.00	0.88	1.29	—
Tarsus	0.52	0.48	0.40	0.44	0.32
Total	4.37	4.25	3.66	4.77	1.29

Palpal bulb (figs. 514, 515) with duct opening from distal lobe.

FEMALE: Unknown.



FIGS. 514–519. *Orongia whangamoa*, new species. 514, 515. Male palp. 516. Claws, leg I, male. 517. Trichobothrium. 518, 519. Tarsal organ.

OTHER MATERIAL EXAMINED: A further male collected with the holotype (EDA).

DISTRIBUTION: Known only from Nelson, South Island.

NOTE: It is possible that *O. whangamoa* could be the male of *O. motueka*; but *O. whangomoa* is markedly smaller and the base of the tarsal organ, although similar to that of the other two species, is relatively higher, with the secondary receptor lobe longer.

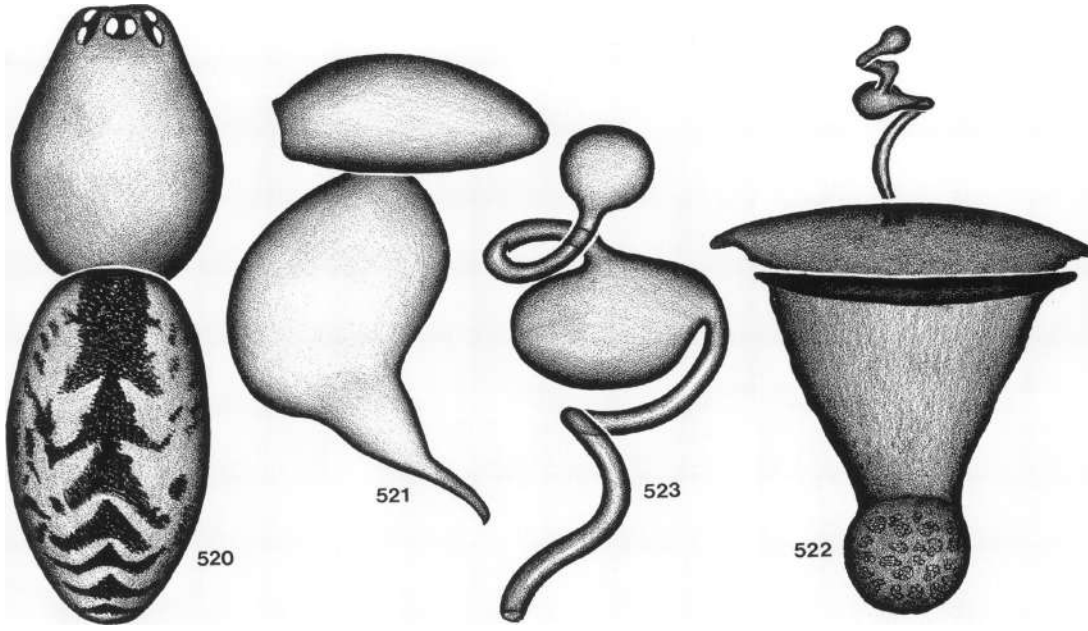
PARALOBUS, NEW GENUS

TYPE SPECIES: *Ascuta salmoni* Forster.

ETYMOLOGY: The generic name is an arbitrary combination of letters and is masculine in gender.

DIAGNOSIS: This genus seems closely related to *Orongia* but can be distinguished by the simple spiniform embolus, the presence of two sacs associated with the anterior portion of the female genitalia, the different shape of the posterior receptaculum, and the presence of numerous marginal lobes on the tarsal organ.

DESCRIPTION: Medium size (total length 2.0–2.4) orsolobids with carapace and sternum unpatterned but with prominent dorsal chevron pattern and few lateral and ventral markings on abdomen. Eyes, chelicerae, sternum, and colulus typical. Female genitalia with slender, curved duct leading from bursal cavity to oval sac at midpoint, duct extending beyond to small, spherical distal sac (fig. 523); posterior receptaculum constricted behind, where secretory pores situated (fig. 522). Legs with spines on distal ventral and lateral surfaces of tibiae and metatarsi III and IV. Claws with teeth restricted to lateral flange (fig. 527). Tarsal organ with numerous lobes around margin of basal mound; long receptor spine accompanied by three smaller receptor lobes (figs. 524, 525); proprioreceptor bristles smooth, blunt, spiniform (fig. 526). Palpal



FIGS. 520–523. *Paralobus salmoni* (Forster). 520. Dorsal view of carapace and abdomen of female. 521. Male palp. 522. Female genitalia. 523. Anterior receptaculum, female genitalia.

bulb with simple spiniform embolus (fig. 521). Spiracles typical.

DISTRIBUTION: Northwestern South Island and southeastern North Island.

Paralobus salmoni (Forster), new combination
Figures 520–527

Ascuta salmoni Forster, 1956, p. 110, figs. 38–40 (male holotype from Queen Charlotte Sounds, Inner Chetwood Island, off South Island, New Zealand, in NMW, examined).

NOTE: All specimens examined from the South Island are similar in abdominal patterning (fig. 520). Because the available North Island material is macerated (due to ineffective preservative in pitfall traps), the color pattern of those specimens is unknown. Their genitalia differ slightly (in the relative sizes of the anterior sacs of the female genitalia and the width of the male embolus). This may be due to postmortem changes or the North Island specimens may represent a second species.

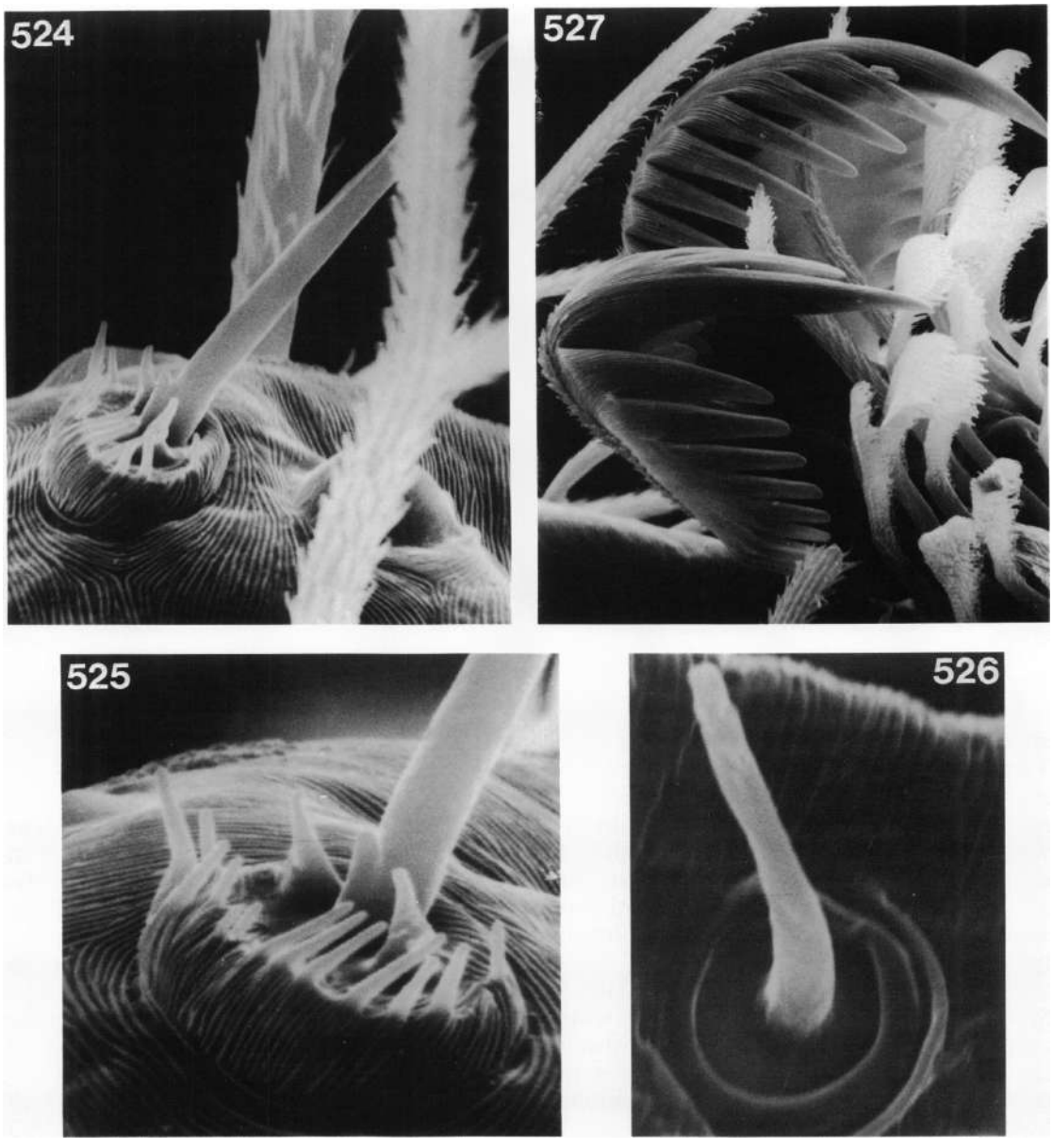
NEW RECORDS: NEW ZEALAND: *North Island:* Wellington: Orongorongo Valley, pitfall traps in broadleaf, hard beech, and silverbeech forests, Jan.–July 1975–1976 (EDA). *South Island:* N Conway River, litter in beech forest, Mar. 25, 1969 (R. R. Forster, OMD); D'Urville Island: Kapowai, litter, Apr. 1971 (F. Alack, EDA); Marlborough: Ships Cove, litter, Nov. 30, 1972 (J. McBurney, EDA); Omahuta State Forest, pitfall, Oct. 7–10, 1974 (EDA); Stephen Island, litter, Feb. 1971 (G. W. Ramsay, EDA).

TANGATA, NEW GENUS

TYPE SPECIES: *Tangata nigra*, new species.

ETYMOLOGY: The generic name is an arbitrary combination of letters and is feminine in gender.

DIAGNOSIS: This genus can be separated from all chevroned genera except *Wiltonia*, *Maoriata*, and *Waiporia* by the presence of a lobulate anterior receptaculum of the female genitalia, from *Waiporia* by the unpatterned carapace (except for *T. pouaka* and *T. parafurcata*) and less convoluted anterior receptaculum, from *Wiltonia* by the absence of sexual dimorphism in the claws, and from *Maoriata* by the smaller size and smooth distal surface of the anterior receptaculum.



FIGS. 524–527. *Paralobus salmoni* (Forster). 524, 525. Tarsal organ. 526. Proprioreceptor bristle, 527. Claws, leg I, female.

DESCRIPTION: Moderate size (total length 2.2–4.5) orsolobids with strong chevron pattern on abdominal dorsum, without scuta; carapace (except in *T. pouaka* and *T. parafurcata*) unpigmented; sternum usually unpigmented. PME set slightly back from ALE. Chelicerae with two teeth on each margin. Sternum and colulus typical. Female genitalia with lobulate anterior receptaculum, sometimes sinuous or moderately convoluted but without nodules (in contrast to irregular surface found in *Maoriata*). Legs with spines on tibiae (p0-0-1, v0-0-2, r0-0-1) and metatarsi (p0-0-2, v0-0-2, r0-0-2) III and IV. Claws with distinct lateral flange bearing teeth, similar in both sexes (fig. 574); tuft of distally

FIG. 528. *Tangata nigra,* new species, female.

spatulate hairs present below claws (fig. 596). Tarsal organ usually with three receptor lobes, median one much longer than other two; marginal lobes present or absent; bothrium with smooth hood (figs. 575, 595); proprioreceptor bristles smooth, branched distally (fig. 576). Palpal bulb with simple embolus, sometimes with parembolic spine. Spiracles typical.

DISTRIBUTION: North and South Island, Stewart Island, and Snares Island. This wide-ranging genus is predominantly forest-dwelling, although a few species have been recorded in tussock areas and in subalpine herbfields.

DISCUSSION: Five species earlier (Forster, 1956) assigned to *Ascuta* seem more correctly placed in this genus. These are *Ascuta stewartensis* Forster, *A. alpina* Forster, *A. orepukiensis* Forster, *A. plena* Forster, and *A. rakiura* Forster. The original descriptions are full, except that the female genitalia were not described; these are now illustrated. Scanning electron micrographs and brief descriptions are provided for a few other characters to permit direct comparison with the new species described below.

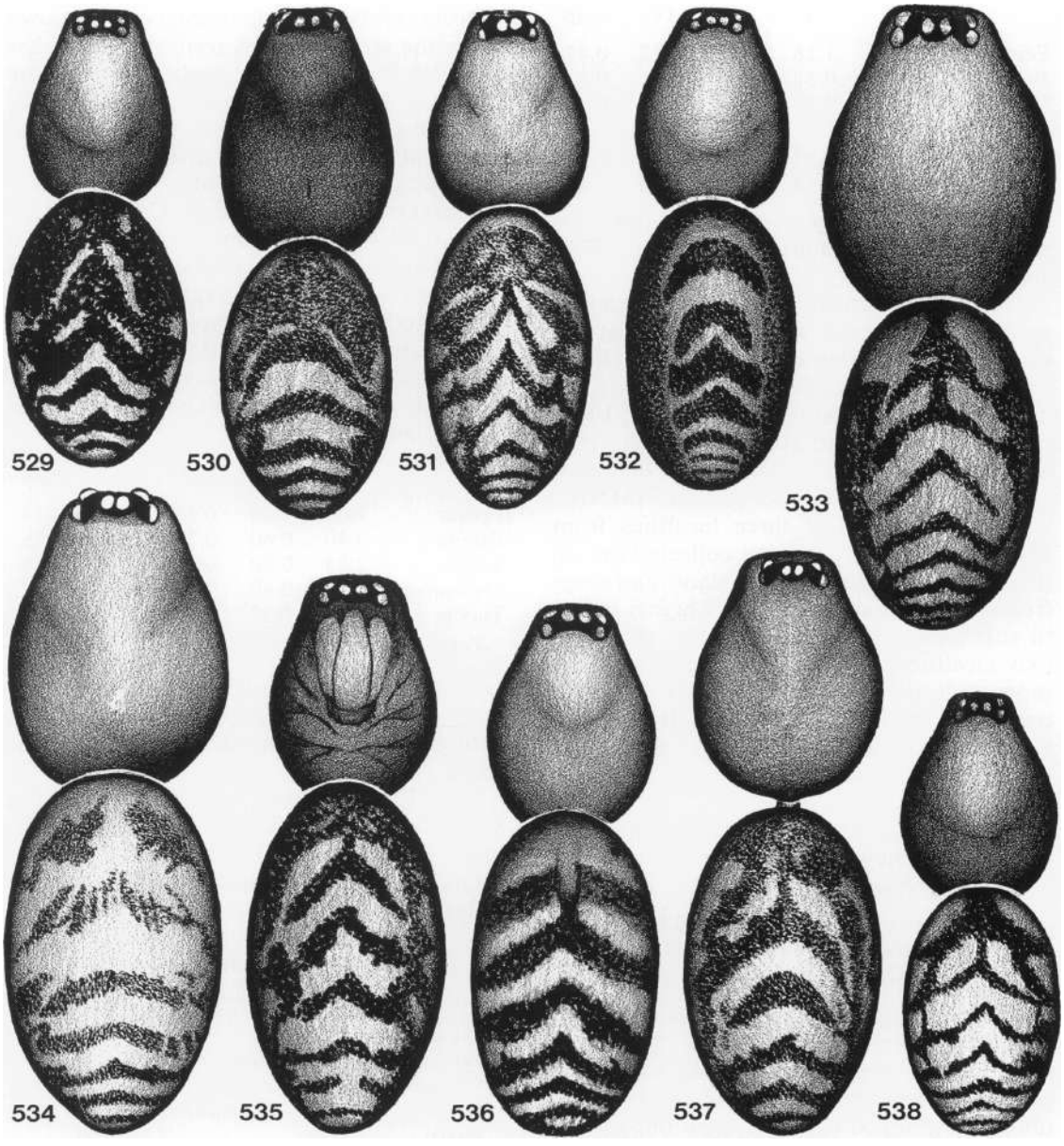
Tangata nigra, new species
Figures 528, 529, 539, 560, 561, 571, 587, 588

TYPES: Male holotype and female paratype from moss on floor of *Nothofagus* forest at an elevation of 1847 ft at Haast, North Island, New Zealand (April 8, 1979; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name refers to the dark pigmentation of the abdomen.

DIAGNOSIS: The heavy pigmentation of the abdomen (fig. 528) and the genitalic structure separate this species from all others.

MALE: Total length 3.04. Carapace 1.40 long, 0.88 wide. Abdomen 1.51 long, 1.03 wide. Dorsal patterning of abdomen as in figure 529, venter with patch near each posterior spiracle and on each side of spinnerets; carapace and sternum unpigmented. Metatarsi III and IV with two additional distal dorsal spines; prolateral and retrolateral spines on tibiae weak. Basal mound of tarsal organ squat, as wide as high, with only two minute marginal lobes; dorsal surface with ridges enclosing three receptor spines, median spine long (figs. 560, 561). Lateral flange of claws with 10 teeth (fig. 571).



FIGS. 529–538. Dorsal view of carapace and abdomen of *Tangata* females (except fig. 534, male). 529. *T. nigra*, new species. 530. *T. orepukiensis* (Forster). 531. *T. stewartensis* (Forster). 532. *T. otago*, new species. 533. *T. alpina* (Forster). 534. *T. horningi*, new species. 535. *T. pouaka*, new species. 536. *T. sylvester*, new species. 537. *T. plena* (Forster). 538. *T. tautuku*, new species.

	I	II	III	IV	Palp
Femur	1.12	1.11	1.05	1.28	0.48
Patella	0.52	0.48	0.45	0.52	0.29
Tibia	0.96	0.88	0.76	1.04	0.29
Metatarsus	0.96	0.92	0.80	1.08	–
Tarsus	0.48	0.48	0.41	0.52	0.24
Total	4.04	3.87	3.47	4.44	1.30

Bulb simple; embolus relatively stout, curved distally, with duct opening near tip (figs. 587, 588).

FEMALE: Total length 4.00. Carapace 1.62 long, 1.12 wide. Abdomen 2.54 long, 1.60 wide. Somatic characters as in male.

	I	II	III	IV	Palp
Femur	1.24	1.16	1.04	1.32	0.47
Patella	0.55	0.52	0.44	0.56	0.24
Tibia	1.00	0.91	0.72	1.00	0.26
Metatarsus	0.97	0.91	0.83	1.24	—
Tarsus	0.44	0.44	0.36	0.48	0.48
Total	4.20	3.94	3.39	4.60	1.45

Genitalia (fig. 539) with secretory pores on posterior receptaculum scattered in small groups.

OTHER MATERIAL EXAMINED: Further specimens collected with the types; at the same locality on February 12, 1984, by R. R. Forster; at Knights Point, Westland, from moss in mixed forest on February 15, 1984, by R. R. Forster; and at Arthur's Pass, from moss on *Nothofagus* forest floor on February 22, 1984, by R. R. Forster (OMD, AMNH).

DISTRIBUTION: The three localities from which the species has been collected are all in southern Westland, North Island, and range from coastal mixed forest (at Knights Point) to subalpine *Nothofagus* forest at the other two localities. The species is undoubtedly more widespread than the records show and probably extends further north. It does not seem to occur further south into the Fiordland district, however.

Tangata stewartensis (Forster), new combination

Figures 531, 557, 591

Ascuta stewartensis Forster, 1956, p. 119, figs. 50–54 (male holotype from Halfmoon Bay, Stewart Island, New Zealand, in CMC, examined).

NOTE: No further material has been collected. The female genitalia (fig. 557) have the anterior receptaculum distally lobed; the pores associated with the posterior receptaculum are grouped as in *T. nigra* but are restricted to an oval poreplate. The dorsal pattern of the male is shown in figure 531, the male palp in figure 591.

Tangata rakiura (Forster), new combination

Figures 545, 552

Ascuta rakiura Forster, 1956, p. 128, figs. 66–68 (male holotype from Easy Cove, southwestern Stewart Island, New Zealand, in NMW, examined).

NOTE: Only the male holotype was known when the species was described. No further material from the type locality has become available, but a female collected from the adjacent Big South Cape Island appears to be conspecific, although it is distinctly larger.

MALE: See Forster (1956).

FEMALE: Total length 2.44. Carapace 1.16 long, 0.87 wide. Abdomen 1.24 long, 0.76 wide. Dorsal patterning of abdomen (fig. 552) with chevrons distinct, merging with marginal longitudinal bands; carapace shaded along margins but without dorsal pattern; sternum unpatterned. Leg spination typical. Tarsal organ with long receptor spine as in *T. murihiku*. Claws typical.

	I	II	III	IV	Palp
Femur	1.08	1.08	0.83	1.16	0.44
Patella	0.40	0.40	0.37	0.47	0.25
Tibia	0.84	0.80	0.64	0.92	0.24
Metatarsus	0.90	0.80	0.67	1.00	—
Tarsus	0.39	0.37	0.37	0.39	0.42
Total	3.61	3.45	2.88	3.94	1.35

Genitalia (fig. 545) similar to those of *T. horningi* but anterior receptaculum not as strongly convoluted, posterior receptaculum larger.

NEW RECORD: One female taken on Big South Cape Island, off Stewart Island, in February 1969, by A. C. Eyles (EDA).

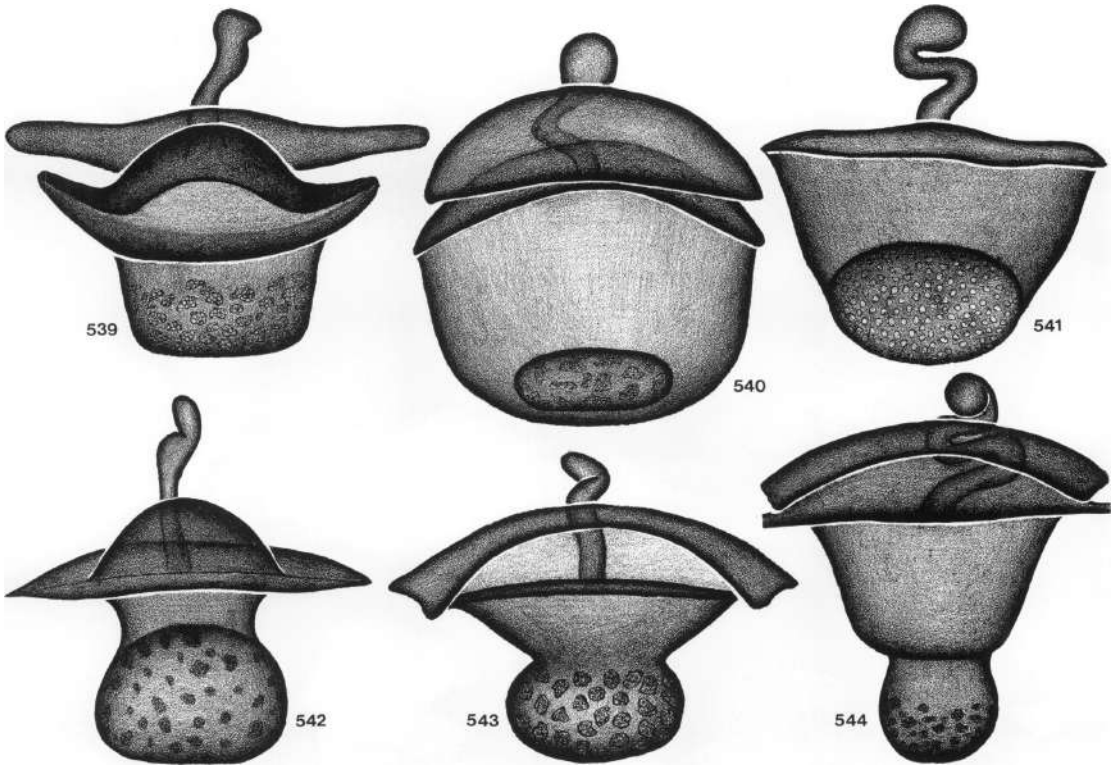
DISTRIBUTION: Stewart and Big South Cape Islands.

Tangata orepukiensis (Forster), new combination

Figures 530, 544, 566

Ascuta orepukiensis Forster, 1956, p. 126, figs. 60–62 (male holotype from Orepuki, Southland, South Island, New Zealand, in CMC, examined).

NOTE: Further specimens from the same locality are now available. The female genitalia (fig. 544) have the anterior receptaculum sinuous and expanded distally. The posterior receptaculum is large, with the posterior portion constricted to form a secondary sac that bears the secretory pores; the pores are in groups over the posterior half. The tarsal organ is similar to that of *T. nigra*, but the upper margins curve into the receptor region and do not bear marginal lobes (fig. 566). The



FIGS. 539–544. Female genitalia of *Tangata*, from above. 539. *T. nigra*, new species. 540. *T. tautuku*, new species. 541. *T. sylvester*, new species. 542. *T. pouaka*, new species. 543. *T. kohuka*, new species. 544. *T. orepukiensis* (Forster).

three receptor lobes are placed in a row, as in *T. nigra*, with the median one long. The lateral flange of the claws bears 9 or 10 teeth. The species seems closely related to *T. stewartensis*, from which it is readily distinguished by the color pattern (fig. 530) and genitalia. The ranges of the two species are separated by the Foveaux Strait and represent a disjunction commonly found in the invertebrate fauna of this region.

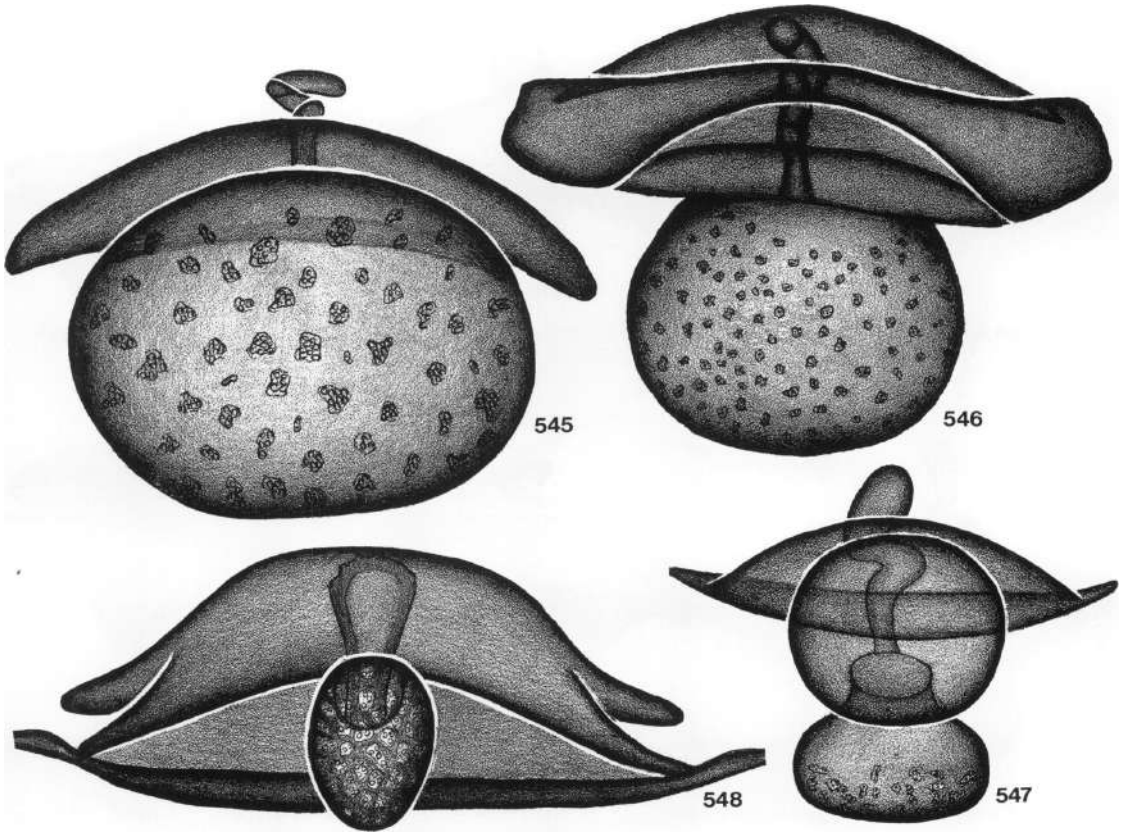
Tangata alpina (Forster),
new combination
Figures 533, 556, 562, 563,
574, 575, 589

Ascuta alpina Forster, 1956, p. 121, figs. 55–59 (male holotype from Arthur's Pass, Canterbury, South Island, New Zealand, in CMC, examined).

NOTE: This distinctive species can be recognized by the abdominal pattern (fig. 533) and distinguished from all others except *T. plena* by the sinuous but simple embolus (fig. 589), which is distinctly narrower and different in outline than in *T. plena*. The female genitalia of the two species are also readily separated. The posterior receptaculum is much smaller in *T. alpina* (fig. 556) and the anterior receptaculum is more slender. The tarsal organ (figs. 562, 563) has three receptor lobes, of which the median one is long and slender; eight narrow cuticular lobes are restricted to the posterior margin of the basal mound. Additional specimens have been taken at the type locality, from moss on the floor of *Nothofagus* forest and from litter in subalpine herbfields.

Tangata plena (Forster),
new combination
Figures 537, 554, 567, 592

Ascuta plena Forster, 1956, p. 135, figs. 76–79 (male holotype from track above Flora Hut,



FIGS. 545–548. Female genitalia of *Tangata,* from above. 545. *T. rakiura* (Forster). 546. *T. horningi,* new species. 547. *T. murihiku,* new species. 548. *T. townsendi,* new species.

Mount Arthur Tableland, Nelson, South Island, New Zealand, in NMW, examined).

NOTE: This species seems closely related to *T. alpina* but can readily be separated from it by the patterning of the abdomen (fig. 537) and the structure of the tarsal organ, the male palp, and the female genitalia. Only males were available when the species was described but a female from near the type locality has now been examined.

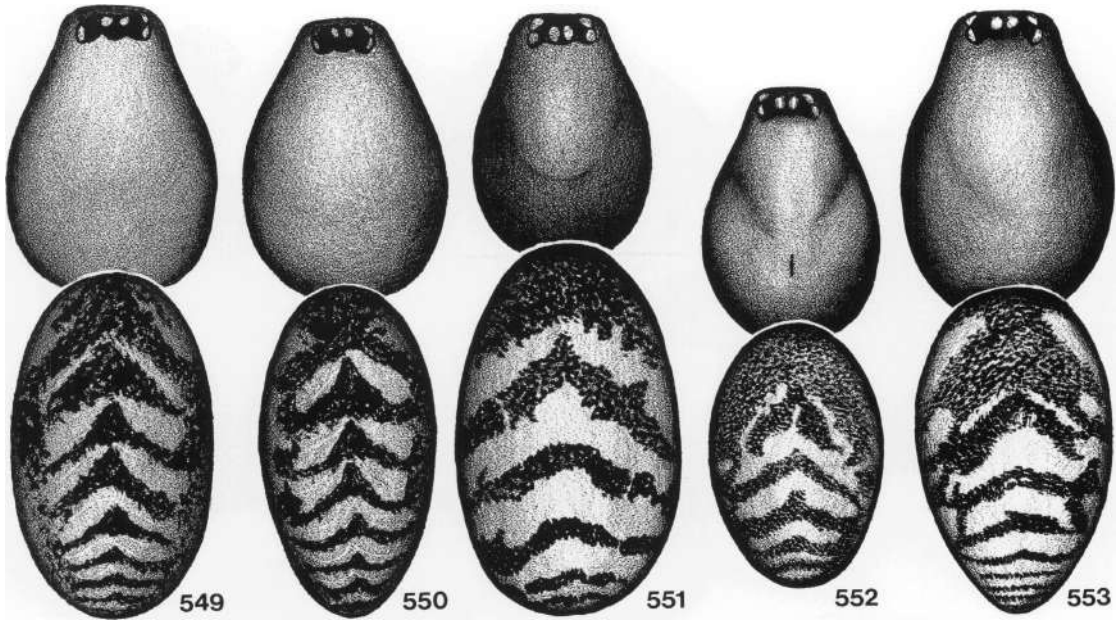
MALE: See Forster (1956). In the original description, the measurements given for the body of the holotype are twice the actual values (the total length is 2.03); the leg measurements are correct. Scanning electron micrographs of the embolus of *T. alpina* and *T. plena* (figs. 589 and 592, respectively) show clearly the distinctive shape of this structure in the two species.

FEMALE: Total length 2.54. Carapace 1.02 long, 0.82 wide. Abdomen 1.53 long, 0.90 wide. Carapace and sternum without shading as in male; abdominal patterning similar to that of male. Leg spination typical. Tarsal organ (fig. 567) similar to that of *T. alpina* but differing in detail. Claws typical.

	I	II	III	IV	Palp
Femur	0.78	0.71	0.63	0.82	0.28
Patella	0.32	0.28	0.24	0.39	0.16
Tibia	0.59	0.59	0.39	0.53	0.20
Metatarsus	0.47	0.47	0.39	0.59	—
Tarsus	0.28	0.28	0.25	0.28	0.24
Total	2.44	2.33	1.90	2.61	0.88

Genitalia (fig. 554) similar to those of *T. alpina* but clearly separated by differences in both anterior and posterior receptacula as well as in shape of transverse muscle plates.

NEW RECORD: One female taken at an elevation of 3500 ft at Lake Sylvester, Nelson,



FIGS. 549–553. Dorsal view of carapace and abdomen of *Tangata* females. 549. *T. kohuka*, new species. 550. *T. waipoua*, new species. 551. *T. townsendi*, new species. 552. *T. rakiura* (Forster). 553. *T. murihiku*, new species.

South Island, on March 30, 1969, by J. S. Dugdale (EDA).

DISTRIBUTION: The species appears to be restricted to the high country of the northwestern portion of the South Island.

Tangata tautuku, new species
Figures 538, 540, 565, 572, 590

TYPES: Male holotype and female paratype from leaf litter in mixed coastal forest at Catlins, Tautuku, Otago, South Island, New Zealand (February 14, 1974; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species seems closely related to *T. stewartensis*, which has a similar abdominal pattern, but the two can be separated by differences in the female genitalia, palpal bulb, and tarsal organ.

MALE: Total length 2.52. Carapace 1.08 long, 0.76 wide. Abdomen 1.44 long, 0.93 wide. Dorsal patterning as in figure 538. Leg spination typical. Tarsal organ typical, with three receptor spines in row, median spine long (fig. 565); no marginal lobes. Claws typical (fig. 572).

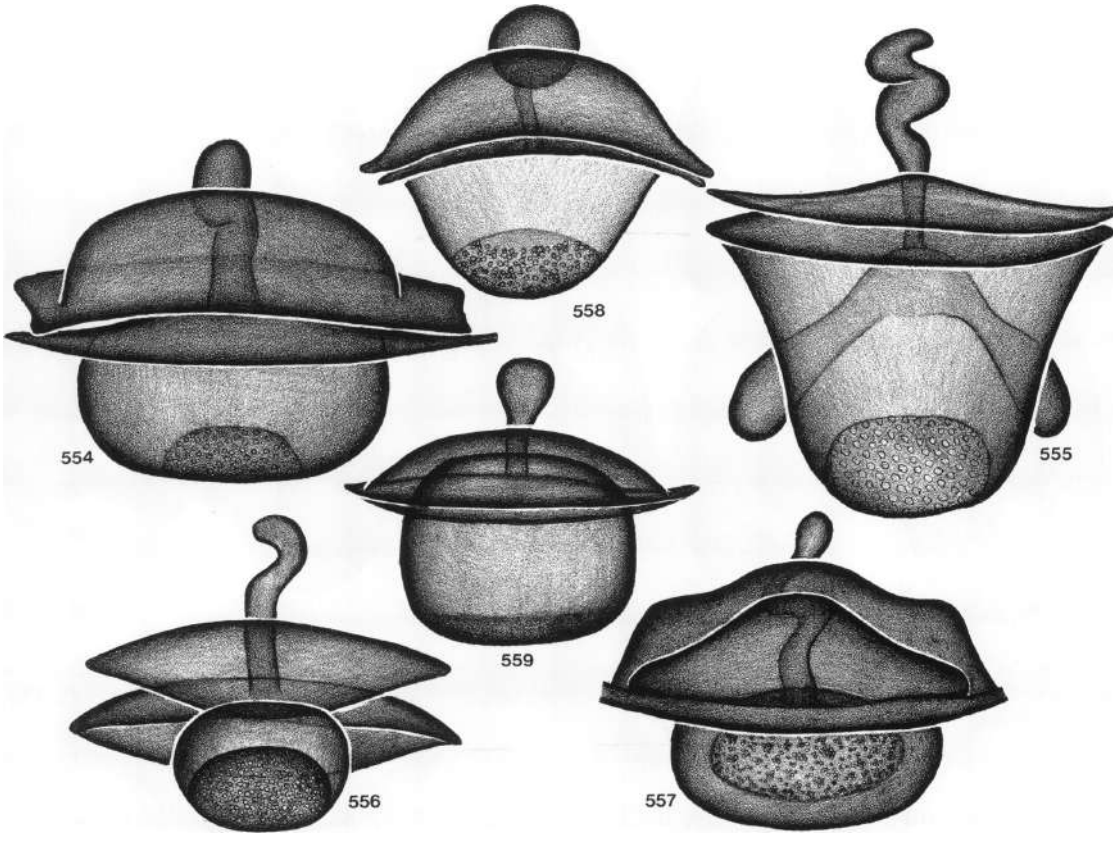
	I	II	III	IV	Palp
Femur	0.84	0.77	0.68	0.84	0.28
Patella	0.40	0.36	0.33	0.40	0.13
Tibia	0.66	0.65	0.44	0.69	0.13
Metatarsus	0.53	0.51	0.44	0.69	—
Tarsus	0.36	0.36	0.32	0.41	0.18
Total	2.79	2.65	2.21	3.03	0.72

Palpal bulb simple, with slender, curved embolus (fig. 590).

FEMALE: Total length 2.60. Carapace 1.20 long, 0.92 wide. Abdomen 1.36 long, 0.92 wide. Somatic characters as in male.

	I	II	III	IV	Palp
Femur	0.76	0.73	0.72	0.88	0.32
Patella	0.32	0.32	0.31	0.40	0.22
Tibia	0.64	0.60	0.48	1.12	0.21
Metatarsus	0.60	0.52	0.44	0.77	—
Tarsus	0.29	0.29	0.24	0.31	0.24
Total	2.61	2.46	2.19	3.48	0.99

Anterior receptaculum of internal genitalia with distinct bulb; posterior receptaculum



FIGS. 554–559. Female genitalia of *Tangata* and *Anopsolobus*, from above. 554. *T. plena* (Forster). 555. *T. waipoua*, new species. 556. *T. alpina* (Forster). 557. *T. stewartensis* (Forster). 558. *T. otago*, new species. 559. *A. subterraneus*, new species.

relatively large but secretory pores in irregular groups restricted to small oval plate (fig. 540).

OTHER MATERIAL EXAMINED: Further specimens collected with the types (OMD, AMNH).

DISTRIBUTION: Known only from Otago, South Island.

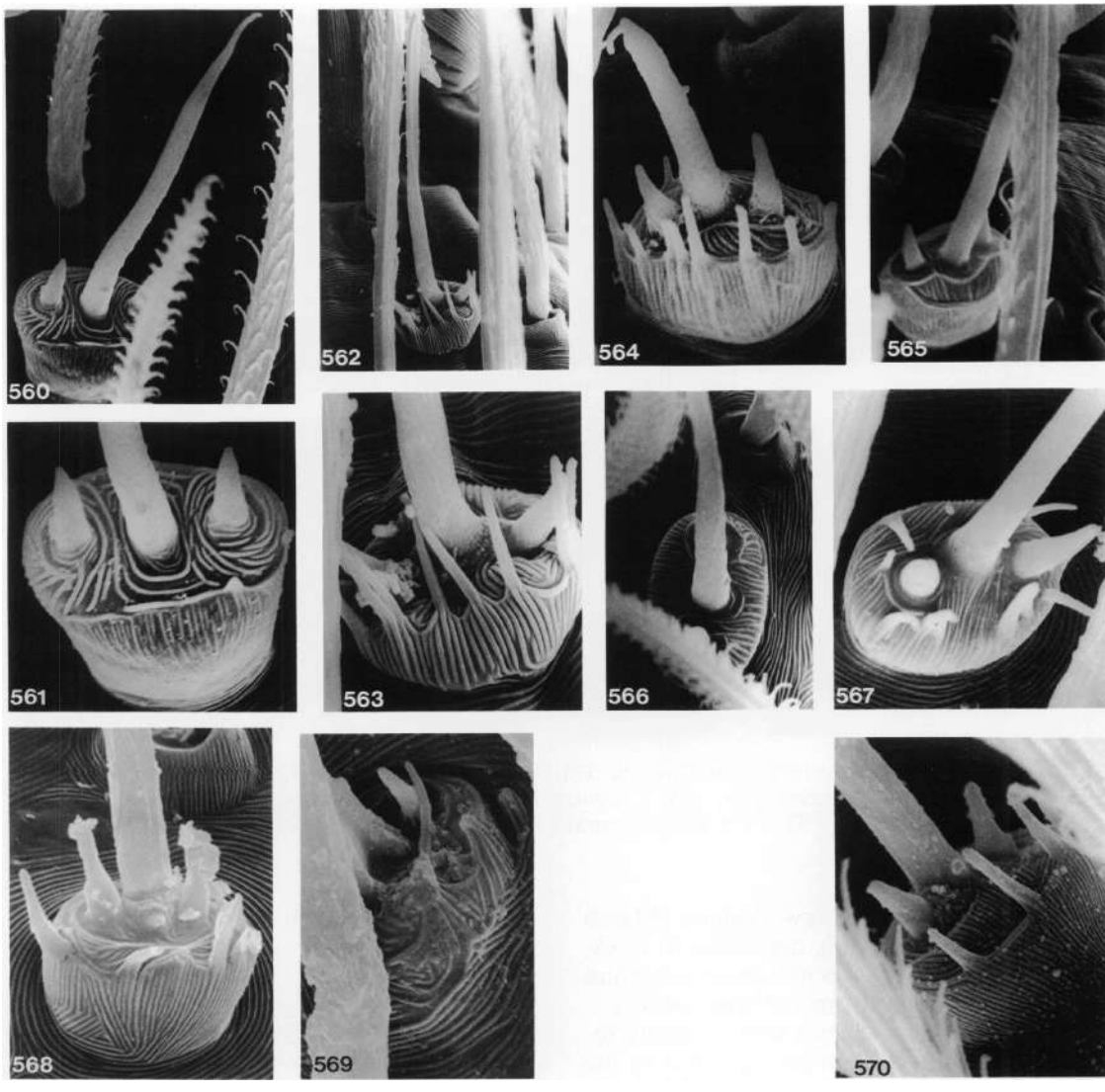
Tangata otago, new species
Figures 532, 558, 564

TYPE: Female holotype from moss at an elevation of 1493 m at Grandview Peak, Otago, South Island, New Zealand (January 21, 1971; J. S. Dugdale), deposited in EDA.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: The heavy abdominal patterning is similar to that of *T. nigra*, but the female genitalia are different; the genitalia are similar to, but readily separated from, those of *T. tautuku*, which has a different abdominal pattern. The presence of numerous marginal lobes on the tarsal organ further separates *T. otago* from both of those species.

FEMALE: Total length 2.63. Carapace 1.09 long, 0.76 wide. Abdomen 1.52 long, 0.80 wide. Abdominal pattern as in figure 532, broad median chevrons not merging with lateral shading, venter unpigmented. Leg spination typical. Tarsal organ (fig. 564) with six to nine slender lobes along posterior margin of basal mound; three receptor lobes in transverse row as in most species, but median lobe (four times as long as outer) bears small basal lobe. Lateral flange of claws with nine marginal teeth.



FIGS. 560–570. Tarsal organ of *Tangata*. 560, 561. *T. nigra*, new species. 562, 563. *T. alpina* (Forster). 564. *T. otago*, new species. 565. *T. tautuku*, new species. 566. *T. orepukiensis* (Forster). 567. *T. plena* (Forster). 568. *T. furcata*, new species. 569. *T. townsendi*, new species. 570. *T. parafurcata*, new species.

	I	II	III	IV	Palp
Femur	0.64	0.64	0.61	0.77	0.29
Patella	0.36	0.36	0.28	0.33	0.16
Tibia	0.52	0.52	0.40	0.56	0.21
Metatarsus	0.49	0.45	0.40	0.65	–
Tarsus	0.32	0.32	0.28	0.28	0.24
Total	2.33	2.29	1.97	2.59	0.90

Genitalia (fig. 558): anterior receptaculum terminated by spherical sac as in *T. tautuku* but larger, with short, straight duct leading from sac to bursa; posterior receptaculum distinctly wider than long, with secretory pores spread in groups over posterior surface.

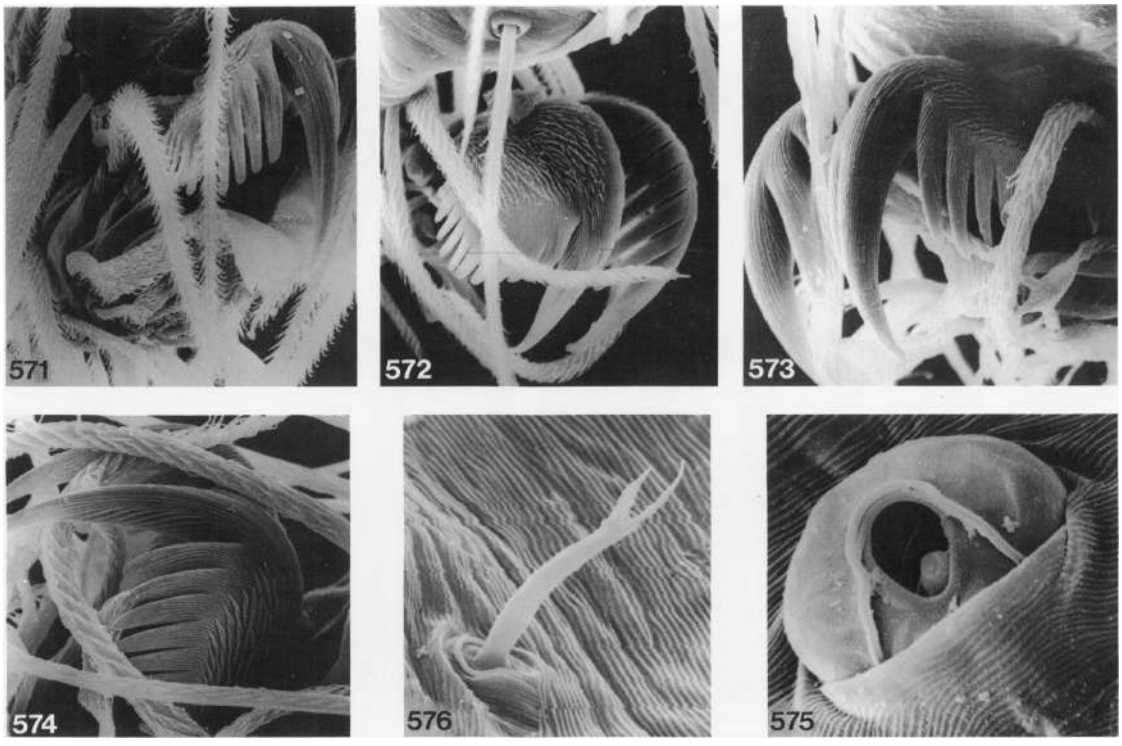
MALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Otago, South Island.

Tangata sylvester, new species
Figures 536, 541, 577–579

TYPE: Female holotype from an elevation of 4300 ft at Cobb Valley, Lake Sylvester,



FIGS. 571–576. Tarsal structure of *Tangata*. 571. *T. nigra*, new species. 572. *T. tautuku*, new species. 573. *T. townsendi*, new species. 574, 575. *T. alpina* (Forster). 576. *T. furcata*, new species. 571. Claws and claw tuft, female, leg I. 572–574. Claws, female, leg I. 575. Bothrium. 576. Proprioreceptor bristle.

Nelson, South Island, New Zealand (March 31, 1969; J. S. Dugdale), deposited in EDA.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species seems closely related to *T. plena* but can be separated by the larger size and by differences in the tarsal organ, female genitalia, and abdominal pattern.

FEMALE: Total length 4.52. Carapace 1.92 long, 1.48 wide. Abdomen 2.64 long, 1.44 wide. Dorsal surface of abdomen patterned as in figure 536, venter with two widely separated bands extending between spinnerets and furrow. Leg spination typical. Tarsal organ with three receptor lobes in transverse row, median long, slender, more than four times height of basal mound (fig. 578, 579); 9 or 10 small, marginal lobes on mound. Claws with typical lateral flange bearing 12 or 13 teeth (fig. 577).

	I	II	III	IV	Palp
Femur	1.84	1.76	1.52	2.00	0.56
Patella	0.80	0.72	0.64	0.81	0.40
Tibia	1.48	1.40	1.12	1.56	0.40
Metatarsus	1.52	1.37	1.24	1.75	—
Tarsus	0.63	0.64	0.60	0.66	0.68
Total	6.27	5.89	5.12	6.78	2.04

Internal genitalia (fig. 541) similar to those of *T. plena* but anterior receptaculum more slender, distinctly sinuous; poreplate on posterior receptaculum much larger, more clearly defined.

MALE: Unknown.

OTHER MATERIAL EXAMINED: A further female taken from litter at Johnson Peak, Richmond Range, Nelson, South Island, on March 13, 1969, by J. S. Dugdale (EDA).

DISTRIBUTION: Nelson mountains, South Island.

Tangata kohuka, new species
Figures 543, 549, 585, 586

TYPE: Female holotype sifted from litter at an elevation of 550 m at Kohukohunui, Hunua Range, Auckland, North Island, New Zealand (March 30, 1974; G. Kuschel), deposited in EDA.

ETYMOLOGY: The specific name is an arbitrary combination of letters.

DIAGNOSIS: This species seems closely related to *T. pouaka* but the two can be separated by differences in the female genitalia, tarsal organ, and the number and size of the teeth on the lateral flange of the claws.

FEMALE: Total length 2.80. Carapace 1.28 long, 0.87 wide. Abdomen 1.60 long, 0.96 wide. Dorsal body pattern as in figure 549; carapace without pigmentation; abdominal venter with heavy lateral bands but median surface pale. Leg spination typical. Tarsal organ with only two marginal lobes and two unequal receptor lobes, one almost twice as long as other (fig. 585). Lateral flange of claws with six teeth (fig. 586).

	I	II	III	IV	Palp
Femur	1.00	0.98	0.77	1.10	0.35
Patella	0.41	0.40	0.32	0.44	0.20
Tibia	0.84	0.83	0.56	1.09	0.20
Metatarsus	0.81	0.81	0.61	1.12	—
Tarsus	0.36	0.36	0.35	0.37	0.38
Total	3.42	3.38	2.61	4.12	1.13

Posterior receptaculum constricted midway to form secondary sac bearing secretory pores; pores associated with small, sclerotized plates (fig. 543).

MALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Hunua Range, North Island.

Tangata pouaka, new species
Figures 535, 542, 583, 584

TYPE: Female holotype taken from litter at an elevation of 1400 m at Pouaka Trig, North Island, New Zealand (December 3, 1975; J. S. Dugdale), deposited in EDA.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species seems closely related to *T. kohuka* but can be separated from it and all species (other than *T. parafurcata*) that have a bifurcate embolus by the patterned carapace, and from *T. kohuka* in particular by differences in the shape of the muscle plates of the female genitalia and in the structure of the tarsal organ.

FEMALE: Total length 2.92. Carapace 1.08 long, 0.80 wide. Abdomen 1.80 long, 1.08 wide. Dorsal surface of body patterned as in figure 535; abdominal venter with patches near each posterior spiracle; sternum with shading at intercoxal margins and posterior surface. Leg spination: tibiae: III p0-0-1, v0-0-2, r0-0-1; IV p0-0-2, v0-0-2, r0-0-2; metatarsi III, IV p0-0-2, v0-0-2, r0-0-2. Tarsal organ (fig. 583) with three receptor lobes, median one long; posterior margin of basal mound with 10 slender lobes. Lateral flange of claws with 9 or 10 long slender teeth (fig. 584).

	I	II	III	IV	Palp
Femur	0.72	0.68	0.56	0.76	0.36
Patella	0.36	0.32	0.28	0.36	0.21
Tibia	0.60	0.60	0.40	0.68	0.24
Metatarsus	0.53	0.48	0.41	0.64	—
Tarsus	0.28	0.28	0.27	0.29	0.28
Total	2.49	2.36	1.92	2.73	1.09

Genitalia (fig. 542) similar to those of *T. kohuka* but differing in form of muscle plate.

MALE: Unknown.

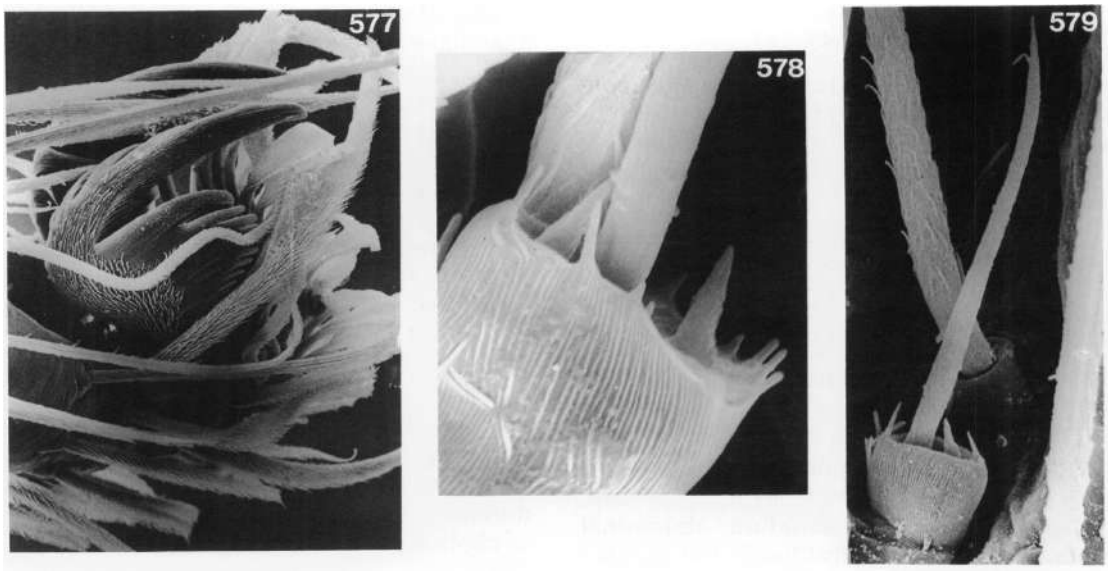
OTHER MATERIAL EXAMINED: One female collected in *Poa colensoi* and *Gaultheria* swards at the type locality on December 3, 1975, by J. S. Dugdale (EDA).

DISTRIBUTION: Central North Island.

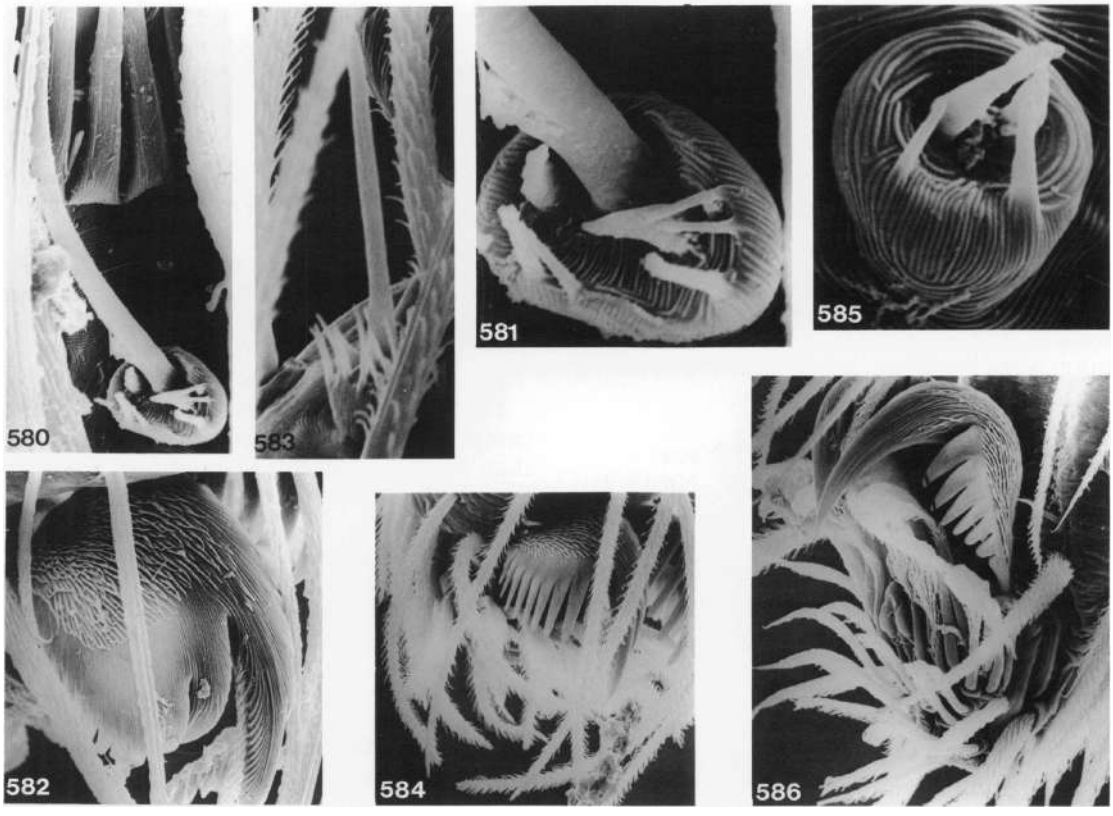
DISCUSSION: The extensive patterning of the carapace is more characteristic of *Waiporia* than *Tangata*, but this form of pigmentation is probably plesiomorphic for a number of genera, tending to become reduced or lost entirely in some species. Within *Tangata*, the two undoubtedly related species *T. furcata* and *T. parafurcata* show this clearly; the pattern on *T. parafurcata* is considerably reduced, whereas in *T. furcata* the carapace is fully pigmented.

Tangata waipoua, new species
Figures 550, 555, 580–582

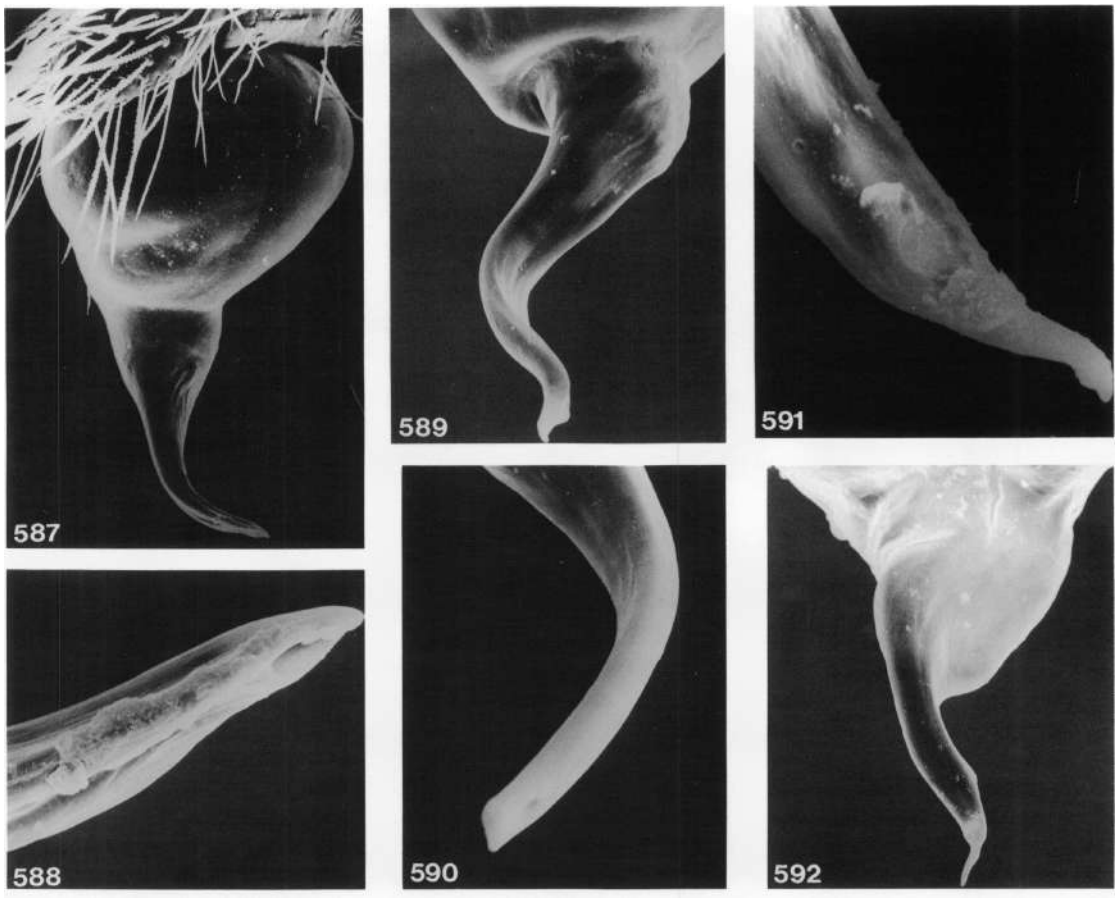
TYPE: Female holotype from kauri forest at Waipoua, Northland, North Island, New



FIGS. 577–579. *Tangata sylvester*, new species. 577. Claws and claw tuft, female, leg I. 578, 579. Tarsal organ.



FIGS. 580–586. Tarsal structure of *Tangata*. 580–582. *T. waipoua*, new species. 583, 584. *T. pouaka*, new species. 585, 586. *T. kohuka*, new species. 580, 581, 583, 585. Tarsal organ. 582. Claw, female, leg I. 584, 586. Claws and claw tuft, female, leg I.



FIGS. 587–592. Male palp of *Tangata*. 587, 588. *T. nigra*, new species. 589. *T. alpina* (Forster). 590 *T. tautuku*, new species. 591. *T. stewartensis* (Forster). 592. *T. plena* (Forster).

Zealand (January 19, 1972; G. W. Ramsay), deposited in EDA.

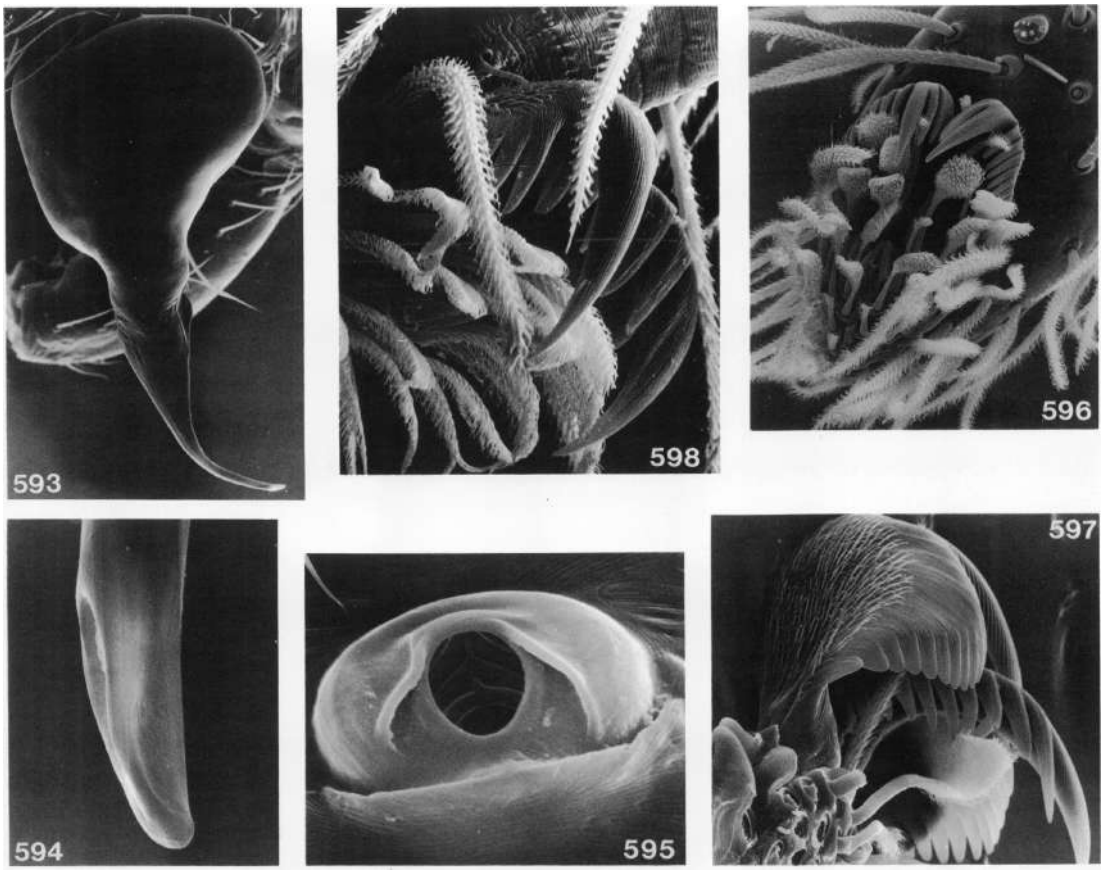
ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species seems closely related to *T. pouaka* and *T. kohuka* but can be separated from both by the form of the female genitalia, in particular the presence of paired sacs associated with the posterior receptaculum and the absence of a secondary sac.

FEMALE: Total length 2.48. Carapace 1.16 long, 0.92 wide. Abdomen 1.36 long, 0.80 wide. Abdominal patterning as in figure 550, venter with three thin longitudinal bands; sternum with indistinct shading on intercoxal margin. Leg spination typical. Tarsal organ with three receptor spines, median one long (figs. 580, 581). Claws with prominent lateral flange bearing 10 short marginal teeth (fig. 582).

	I	II	III	IV	Palp
Femur	0.97	0.96	0.83	1.05	0.33
Patella	0.40	0.40	0.40	0.49	0.21
Tibia	0.82	0.81	0.60	0.92	0.21
Metatarsus	0.78	0.72	0.57	0.96	—
Tarsus	0.38	0.37	0.33	0.39	0.39
Total	3.35	3.26	2.73	3.81	1.14

Genitalia (fig. 555): posterior receptaculum simple sac with secretory pores spaced evenly within oval region at base of sac but also with paired lobes apparently originating from proximodorsal surface (only one genitalic mount was examined and this unusual structure may be an artifact; even if so, other char-



FIGS. 593–598. Structure of *Tangata*. 593–597. *T. horningi*, new species. 598. *T. murihiku*, new species. 593, 594. Male palp. 595. Bothrium. 596. Claw tuft, male, leg I. 597. Claws, male, leg I. 598. Claws and claw tuft, male, leg I.

acters of the organ clearly distinguish this species from all others).

MALE: Unknown.

OTHER MATERIAL EXAMINED: Single females from leaf litter taken at an elevation of 180 m about 3 miles southeast of Unuwhao, Northland, North Island, on February 24, 1967, by K. A. J. Wise, and from litter at Te Mataa Ngarere, Waipoua State Forest, Northland, on February 4, 1975, by J. C. Watt (EDA).

DISTRIBUTION: Known only from the North Cape region, North Island.

Tangata horningi, new species
Figures 534, 546, 593–597, 601, 602

TYPES: Male holotype collected from the dry skirts of *Poa tennantiana* on Snares Island, New Zealand (December 10, 1974; C. J. Horning), and female paratype from the same locality and habitat (December 21, 1974; D. Horning), deposited in OMD.

ETYMOLOGY: The specific name is a patronym in honor of D. Horning in recognition of his extensive surveys of the previously little known invertebrate fauna of Snares Island.

DIAGNOSIS: This species can immediately be separated from all others except *T. murihiku* by the pale chevron pattern and from *T. murihiku* by the distinctive female genitalia and differences in the tarsal organ.

MALE: Total length 2.96. Carapace 1.28 long, 1.00 wide. Abdomen 1.61 long, 1.05 wide. Dorsal abdominal pattern as in figure 534, venter with single dark patch on mid-

surface; sternum unpigmented. Leg spination typical. Tarsal organ with three sensillae in transverse row (figs. 601, 602), median longest but little more than twice as long as outer (one tarsal organ examined had only two sensillae); five or six lobes present on proximal margin of basal mound. Lateral flange of claws prominent, with 10 marginal teeth (fig. 597).

	I	II	III	IV	Palp
Femur	1.00	0.93	0.91	1.10	0.28
Patella	0.44	0.41	0.32	0.42	0.20
Tibia	0.77	0.76	0.56	0.80	0.20
Metatarsus	0.73	0.76	0.60	0.84	—
Tarsus	0.40	0.37	0.37	0.40	0.20
Total	3.34	3.23	2.76	3.56	0.88

Bulb simple (fig. 593), embolus narrowing distally, where evenly curved; duct opening distally (fig. 594).

FEMALE: Total length 3.72. Carapace 1.52 long, 1.09 wide. Abdomen 2.32 long, 1.36 wide. Somatic characters as in male.

	I	II	III	IV	Palp
Femur	1.08	1.06	1.00	1.23	0.40
Patella	0.52	0.49	0.47	0.52	0.21
Tibia	0.84	0.84	0.68	0.89	0.21
Metatarsus	0.84	0.77	0.64	1.06	—
Tarsus	0.37	0.37	0.33	0.38	0.40
Total	3.65	3.53	3.12	4.08	1.22

Genitalia (fig. 546) with muscle plates strongly developed; anterior receptaculum convoluted; posterior receptaculum single large sac with secretory pores scattered in groups over whole surface.

OTHER MATERIAL EXAMINED: Other specimens collected at the type locality from December 6 to 23, 1974, and from litter at Sinkhole Flat, Snares Island, on November 3, 1971, by C. J. Horning (OMD, AMNH).

DISTRIBUTION: Known only from Snares Island.

Tangata murihiku, new species
Figures 547, 553, 598–600, 824

TYPES: Male holotype and female paratype collected from moss in *Nothofagus* forest at Lake Monowai, Southland, South Island, New Zealand (March 13, 1981; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name is a noun in apposition taken from the Maori term for the southern region of the South Island.

DIAGNOSIS: This species seems closely related to *T. horningi* and *T. rakiura* but can be separated from both by differences in the female genitalia and from *T. horningi* by the absence of marginal lobes on the tarsal organ.

MALE: Total length 2.22. Carapace 1.05 long, 0.81 wide. Abdomen 1.20 long, 0.76 wide. Dorsal abdominal pattern as in figure 553, venter unpigmented except for some shading at each side of spinnerets. Leg spination typical. Tarsal organ with long receptor spine in front of smaller lobe, third lobe near retrolateral margin (figs. 599, 600). Lateral flange of claws weakly developed, with only six or seven teeth (fig. 598).

	I	II	III	IV	Palp
Femur	0.76	0.73	0.69	0.80	0.28
Patella	0.37	0.33	0.32	0.38	0.21
Tibia	0.61	0.60	0.48	0.64	0.21
Metatarsus	0.61	0.56	0.52	0.69	—
Tarsus	0.32	0.32	0.29	0.35	0.22
Total	2.67	2.54	2.30	2.86	0.92

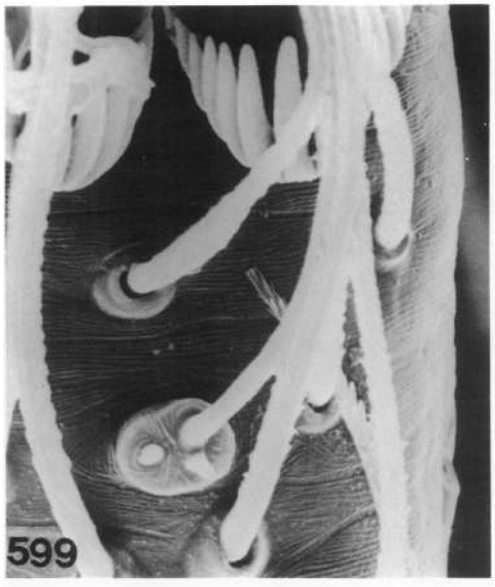
Palpal bulb (fig. 824) similar to that of *T. horningi* but basal portion much broader, proximal portion of embolus more slender.

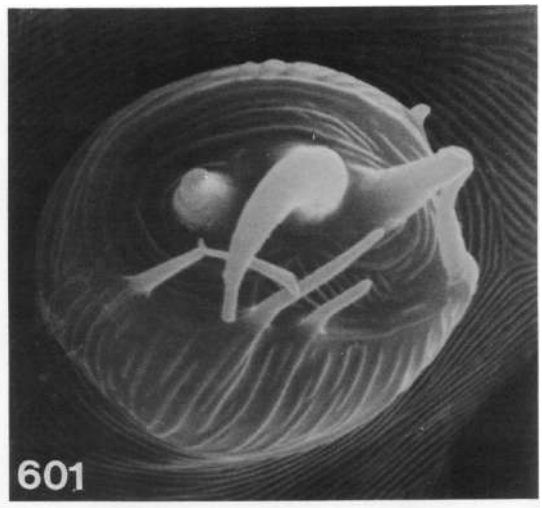
FEMALE: Total length 2.36. Carapace 1.05 long, 0.77 wide. Abdomen 1.28 long, 0.72 wide. Somatic characters as in male.

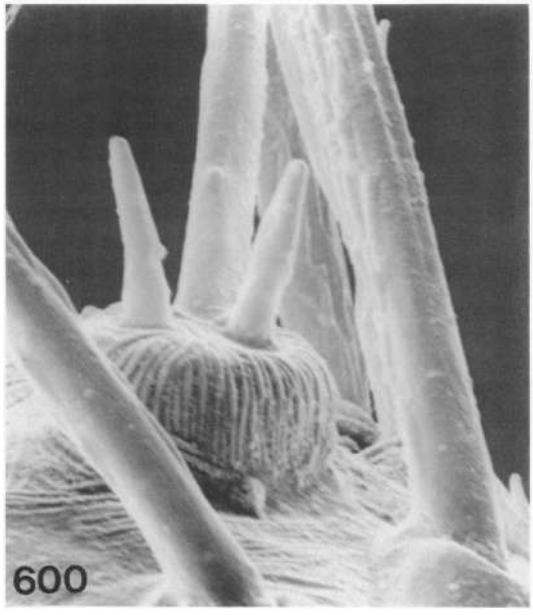
	I	II	III	IV	Palp
Femur	0.76	0.68	0.67	0.92	0.28
Patella	0.36	0.29	0.25	0.38	0.21
Tibia	0.68	0.68	0.48	0.76	0.21
Metatarsus	0.65	0.61	0.53	0.80	—
Tarsus	0.36	0.36	0.33	0.41	0.31
Total	2.81	2.62	2.26	3.27	1.01

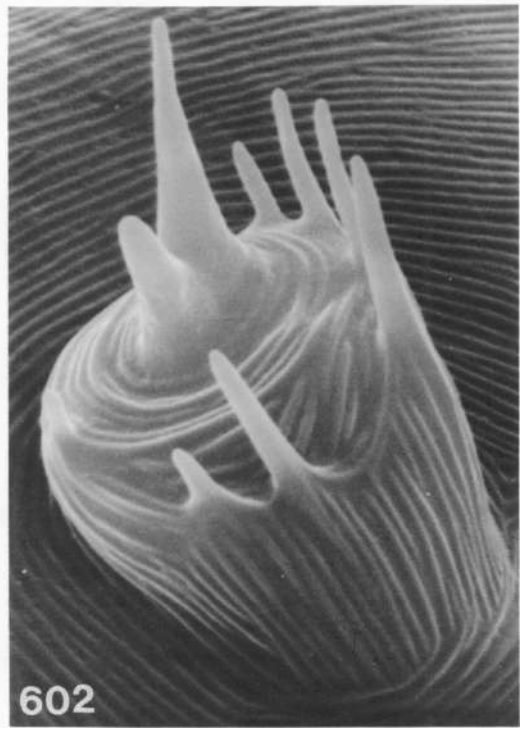
Genitalia with sinuous anterior receptaculum (fig. 547) distinctly swollen distally; posterior receptaculum with strongly differentiated posterior sac bearing secretory pores; pores relatively sparse, grouped over posterior surface.

OTHER MATERIAL EXAMINED: NEW ZEALAND: *South Island:* Altonburn, Tuatapere, moss on forest floor, Nov. 25–March 13, 1970–1981 (R. R. Forster, C. L. Wilton, OMD); Lake Hauroko, moss on forest floor, Nov. 20–Mar. 12, 1966–1981 (R. R. Forster, C. L. Wilton, J. I. Townsend, OMD); Lake









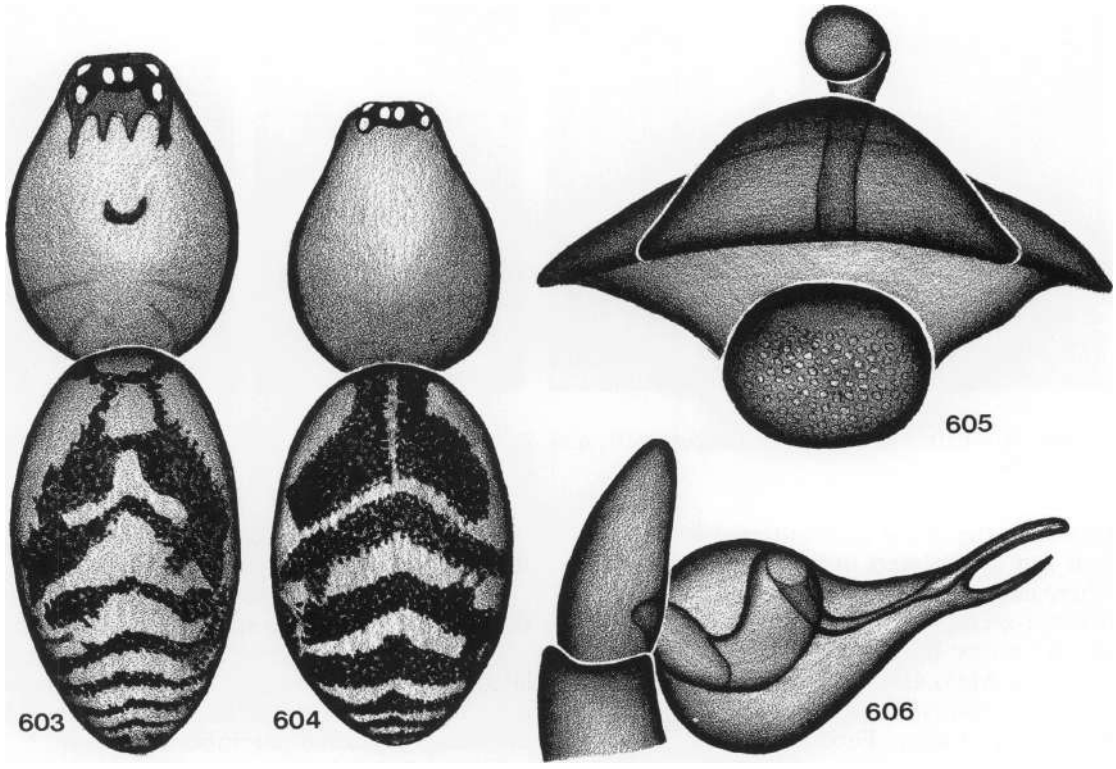
FIGS. 599–602. Tarsal organ of *Tangata*. 599, 600. *T. murihiku,* new species. 601, 602. *T. horningi,* new species.

Monowai, moss, Jan. 15–Mar. 13, 1971–1981 (R. R. Forster, OMD, AMNH); Tuatapere, moss on forest floor, Oct. 20, 1971 (R. R. Forster, OMD).

DISTRIBUTION: Apparently restricted to the southeast part of the South Island, mainly in high rainfall forest providing a rich covering of moss; the species has not been found further north in forests with lower rainfall.

Tangata furcata, new species
Figures 568, 576, 604–606, 609, 610

TYPES: Male holotype and female paratype collected from litter in mixed forest at Mount



FIGS. 603–606. Structure of *Tangata*. 603. *T. parafurcata*, new species. 604–606. *T. furcata*, new species. 603. Dorsal view of carapace and abdomen of male. 604. Dorsal view of carapace and abdomen of female. 605. Female genitalia, from above. 606. Male palp, cleared to show spermophore duct.

Cargill, near Dunedin, Otago, South Island, New Zealand (November 14, 1974; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name refers to the bifurcate embolus.

DIAGNOSIS: This species seems closest to *T. parafurcata* but can be separated from it by differences in the shape of the embolic region of the male palp.

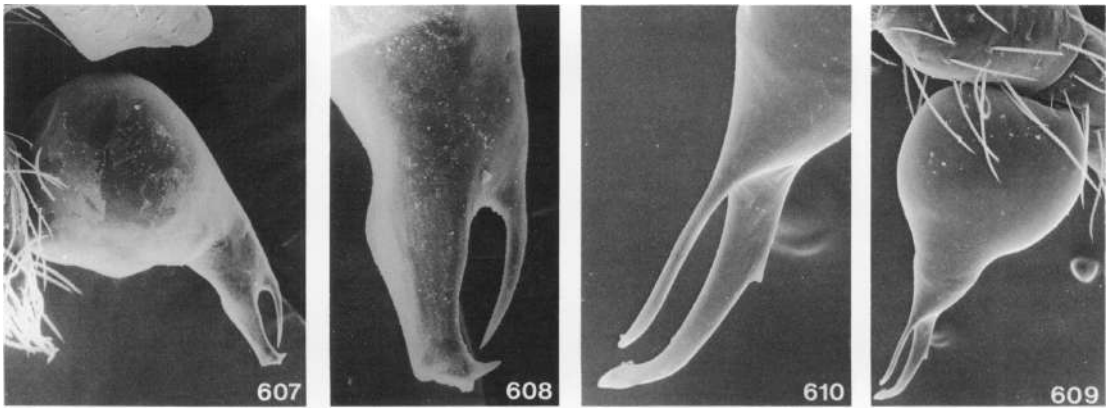
MALE: Total length 2.32. Carapace 1.12 long, 0.93 wide. Abdomen 1.17 long, 0.80 wide. Dorsal patterning of abdomen as in figure 604, venter unpigmented; carapace without patterning but with shading bordering lateral margins. Leg spination typical. Tarsal organ (fig. 568) with three receptor lobes in transverse row, median lobe long; four or five marginal lobes. Lateral flange of claws weakly developed, with eight or nine long slender teeth.

	I	II	III	IV	Palp
Femur	1.24	1.12	0.93	1.29	0.44
Patella	0.44	0.44	0.41	0.47	0.24
Tibia	1.12	1.00	0.76	1.16	0.27
Metatarsus	1.04	0.96	0.84	1.16	—
Tarsus	0.52	0.49	0.40	0.49	0.25
Total	4.36	4.01	3.34	4.57	1.20

Bulb (figs. 606, 609, 610) with parembolic process slender, rounded distally.

FEMALE: Total length 3.12. Carapace 1.31 long, 0.96 wide. Abdomen 1.88 long, 1.20 wide. Somatic characters as in male.

	I	II	III	IV	Palp
Femur	1.28	1.20	1.08	1.35	0.48
Patella	0.47	0.47	0.40	0.52	0.20
Tibia	1.16	1.05	0.74	1.20	0.23
Metatarsus	0.96	0.93	0.84	1.24	—
Tarsus	0.52	0.48	0.40	0.52	0.40
Total	4.39	4.13	3.46	4.83	1.31



FIGS. 607–610. Male palp of *Tangata*. 607, 608. *T. parafurcata*, new species. 609, 610. *T. furcata*, new species.

Genitalia (fig. 605) with anterior receptaculum not convoluted but bent back distally, where expanded; posterior receptaculum with distinct secondary posterior sac bearing secretory pores; pores evenly spread over sac.

OTHER MATERIAL EXAMINED: NEW ZEALAND: *South Island:* Otago: Big Boggy Burn, Matukituki Valley, Feb. 7, 1970 (C. L. Wilton, OMD); Deep Dell, pitfall, Oct. 4–Dec. 26, 1967–1968 (C. L. Wilton, OMD); Evansdale Glen, leaf litter, June 11, 1966 (C. L. Wilton, OMD); Hyde, pitfall, Nov. 6, 1967 (C. L. Wilton, OMD); Leith Saddle, leaf litter, Oct. 10, 1975, Feb. 11, 1978 (R. R. Forster, OMD); Logan Burn, elevation 900 m, pitfall, Oct. 7–21, 1982 (B. I. P. Barratt, OMD); Rock and Pillar Range, elevation 3500 ft, Nov. 29, 1983 (R. R. Forster, D. Hesson, OMD); Summit Taieri Ridge, Deep Dell Fillyburn, pitfall, Sept. 12–Dec. 16, 1967–1968 (C. L. Wilton, OMD); Trotters Gorge, July 27, 1967 (R. R. Forster, OMD); Waipori Gorge, moss in *Nothofagus* forest, Mar. 18, 1977, Sept. 20, 1979 (R. R. Forster, OMD, AMNH).

DISTRIBUTION: The species has been found in central and northern Otago, South Island, from sea level up to 3500 ft. It has been collected from litter in both mixed and *Nothofagus* lowland forest, as well as from litter in both lowland and subalpine tussockland.

Tangata parafurcata, new species
Figures 570, 603, 607, 608

TYPE: Male holotype from moss on forest floor at Alton Burn, Tuatpaere, Southland, South Island, New Zealand (March 13, 1981; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name refers to the relationship of the species to *T. furcata*.

DIAGNOSIS: This species seems closely related to *T. furcata* but can be separated from it by the different shape of the embolus and the sharply pointed parembolic process.

MALE: Total length 2.28. Carapace 1.00 long, 0.82 wide. Abdomen 1.20 long, 0.77 wide. Dorsal patterning of body as in figure 603; traces of pattern on midsurface of carapace and behind eyes, some shading present around lateral margins as in *T. furcata*; abdominal venter with two patches behind furrow near posterior spiracles and two at base of spinnerets; sternum unpigmented. Leg spination typical. Tarsal organ (fig. 570) similar to that of *T. furcata*. Claws typical.

	I	II	III	IV	Palp
Femur	1.00	0.93	0.84	1.16	0.28
Patella	0.40	0.40	0.37	0.40	0.28
Tibia	0.95	0.88	0.64	1.09	0.24
Metatarsus	0.88	0.88	0.72	1.05	—
Tarsus	0.44	0.40	0.37	0.44	0.31
Total	3.67	3.49	2.94	4.14	1.11

Bulb with embolus stouter than in *T. furcata*, distal portion shaped differently; parembolic spine evenly curved, terminating sharply (figs. 607, 608).

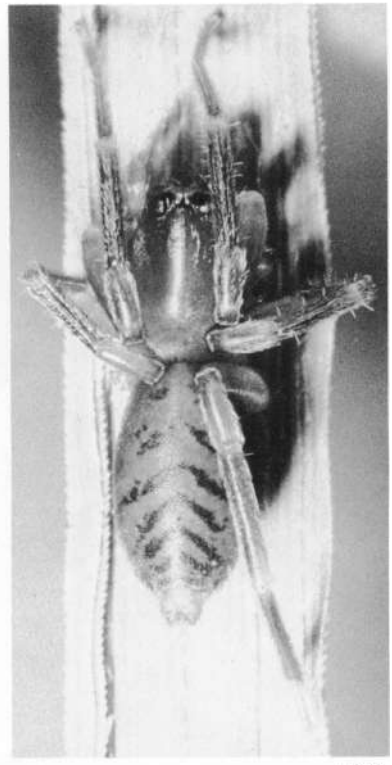
FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Eastern Southland, South Island.

611

612



613

FIGS. 611–613. Females of *Maoriata*. 611. *M. magna* (Forster). 612. *M. montana*, new species. 613. *M. vulgaris*, new species.

Tangata townsendi, new species
Figures 548, 551, 569, 573

TYPE: Female holotype collected from moss at an elevation of 760 m on Mount Stokes, Marlborough, South Island, New Zealand (March 12, 1970; J. I. Townsend), deposited in EDA.

ETYMOLOGY: The specific name is a patronym in honor of the collector of the holotype.

DIAGNOSIS: The female genitalia are distinctive and separate this species from all others.

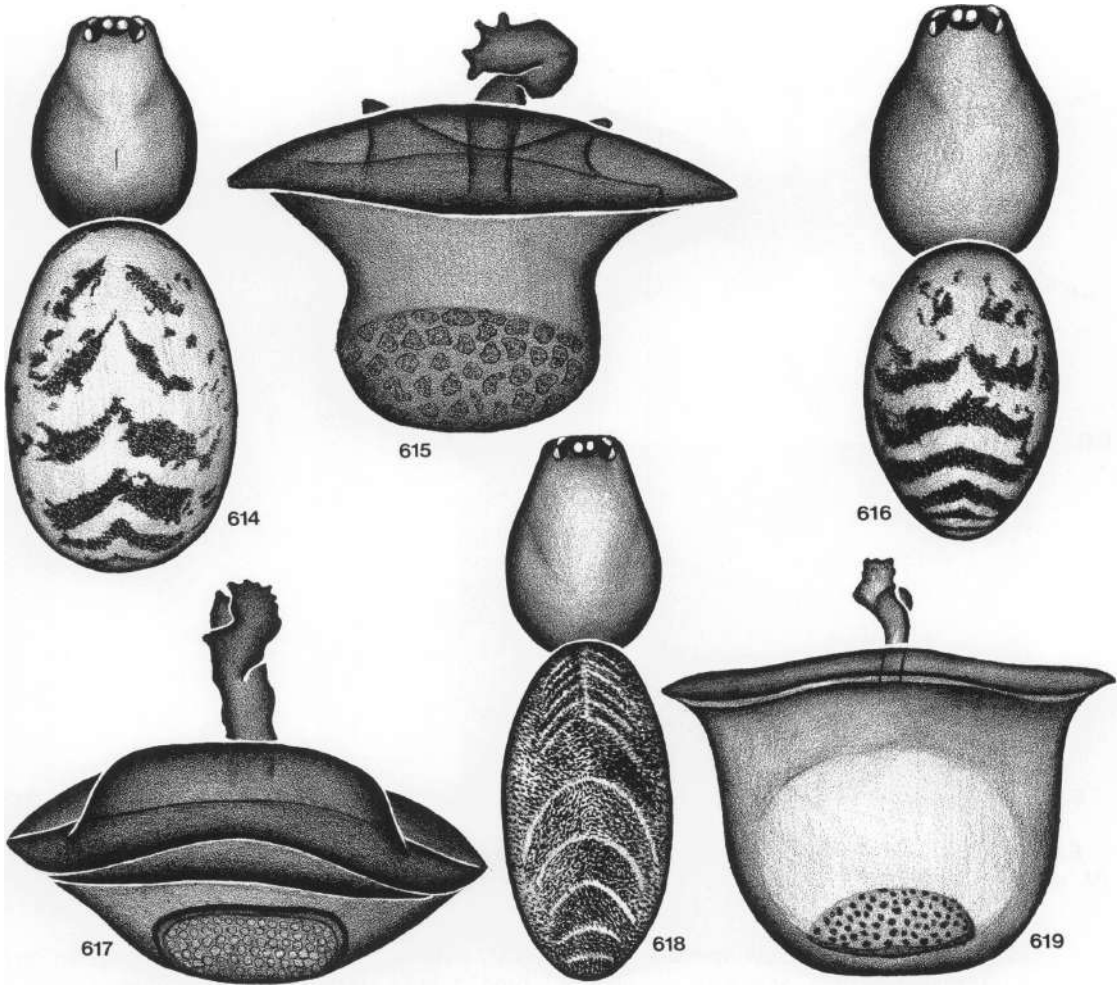
FEMALE: Total length 2.44. Carapace 0.92 long, 0.76 wide. Abdomen 1.52 long, 1.00 wide. Dorsal abdominal pattern as in figure 551, venter with shading in front of spinnerets and behind furrow; sternum unpigmented. Leg spination typical except for loss of prolateral and retrolateral distal spines on tibiae III and IV. Tarsal organ (fig. 569) typical, with three receptor spines, median one long. Claws with weakly developed lateral flange bearing only five teeth (fig. 573); inner teeth reduced in number to six but strong.

	I	II	III	IV	Palp
Femur	0.76	0.65	0.56	0.76	0.28
Patella	0.32	0.32	0.24	0.30	0.17
Tibia	0.48	0.48	0.40	0.56	0.17
Metatarsus	0.48	0.45	0.40	0.61	—
Tarsus	0.37	0.36	0.28	0.32	0.23
Total	2.41	2.26	1.88	2.55	0.85

Genitalia (fig. 548): anterior receptaculum linguiform, with large atrium, secretory gland associated with distal surface; secretory portion of posterior receptaculum small sphere with pores opening from numerous irregular plates forming tessellated pattern.

MALE: Unknown.

OTHER MATERIAL EXAMINED: None.



FIGS. 614–619. Structure of *Maoriata*. 614, 615. *M. vulgaris*, new species. 616, 617. *M. magna* (Forster). 618, 619. *M. montana*, new species. 614, 616, 618. Dorsal view of carapace and abdomen of female. 615, 617, 619. Female genitalia.

DISTRIBUTION: Marlborough Mountains, South Island.

NOTE: The correct placement of this species is in doubt, but it does not fit readily in any other New Zealand genus. On the basis of the form of the genitalia and the reduction in the number of teeth on the claws, a separate genus might be established, but until further material (including males) becomes available, we place the species in *Tangata*.

MAORIATA, NEW GENUS

TYPE SPECIES: *Ascuta magna* Forster.

ETYMOLOGY: The generic name is based on the name of the native peoples of New Zealand, and is feminine in gender.

DIAGNOSIS: The genus contains the largest New Zealand orsolobids except for *Subantarctia*, and differs from that genus in the abdominal pattern, the simple palpal bulb, and the presence of a posterior receptaculum in the female genitalia.

DESCRIPTION: Large (total length 4.0–4.9) orsolobids with pigmented abdomen which may show distinct dorsal chevrons or be more evenly pigmented so that chevron pattern is partly obscured (figs. 611–613), without scuta; carapace and sternum unpigmented. Che-

licerae with two teeth on each margin. Sternum scutiform, slightly longer than wide. Colulus small, with five hairs. Anterior receptaculum of female genitalia short, lobulate, with irregular projections on distal portion; posterior receptaculum prominent sac extending across full width of muscle plates, with secretory pores restricted to posterior surface. Leg with spines on distal surfaces of tibiae and metatarsi III and IV. Claws with strongly developed lateral flange, similar in both sexes, with teeth not extending beyond flange; thick tuft of spatulate hairs present below claws (fig. 625). Tarsal organ low, with from two to five short receptor lobes, one distinctly longer; bothria smooth; proprioreceptor bristles smooth, branched distally (fig. 628). Palpal bulb simple, pyriform, with no embolic modifications. Spiracles typical.

DISTRIBUTION: Southern portion of South Island. Although *M. magna* is generally found in moss in high rainfall forest, the other two known species occur in open grassland in both lowland and subalpine habitats.

Maoriata magna (Forster), new combination
Figures 611, 616, 617, 620–622, 627, 628

Ascuta magna Forster, 1956, p. 104, figs. 27–34 (male holotype from Lake Te Au, near Lake Te Anau, Fiordland, South Island, New Zealand, in CMC, examined).

NOTE: This large (total length 4.23) and chevroned (fig. 616) species is adequately described, but further details can now be added. The tarsal organ (figs. 621, 622) bears five receptor spines (not three as originally recorded) and few marginal lobes. The main receptor spine is four or five times as long as the other spines. The claws have a prominent lateral flange with 12–14 teeth along the margin (fig. 620). The male palpal bulb is elongate but stout (fig. 627). The female genitalia, not previously described, are illustrated in figure 617. The anterior receptaculum is irregularly divided and lobed distally. The posterior receptaculum is more shallow than in either *M. vulgaris* or *M. alpina* and is provided with a clearly defined oval poreplate closely covered with evenly spaced pores.

The five receptor spines on the tarsal organ and the form of both the male and female genitalia readily typify the species. The abdominal pattern, although resembling that of *M. vulgaris,* is constant and sufficiently distinct to enable the species to be recognized in the field.

NEW RECORDS: NEW ZEALAND: *South Island:* Fiordland: Cascade Creek, Eglinton Valley, moss in *Nothofagus* forest, Jan. 12–Feb. 17, 1975–1980 (R. R. Forster, OMD); Key Summit, moss and lichens on *Nothofagus* trunks, Jan. 26, 1964 (R. R. Forster, OMD); Lyttles Flat, Eglinton Valley, tussock, Feb. 17, 1975 (A. D. Blest, OMD); Tutuko Bench, western flanks, Darran Mountains, elevation 945 m, pitfall in pasture, Jan. 9–15, 1977 (J. S. Dugdale, EDA). Westland: Arthur's Pass, moss in *Nothofagus* forest, Feb. 22, 1984 (R. R. Forster, OMD); Haast Pass, elevation 1850 ft, moss in *Nothofagus* forest, Feb. 12–Apr. 8, 1966–1984 (R. R. Forster, OMD, AMNH).

DISTRIBUTION: The new records extend the range of the species further north in the South Island, but beyond the Fiordland region it seems to occur only in higher subalpine forest and has not been found in the lowland forest down the coastal region of Westland.

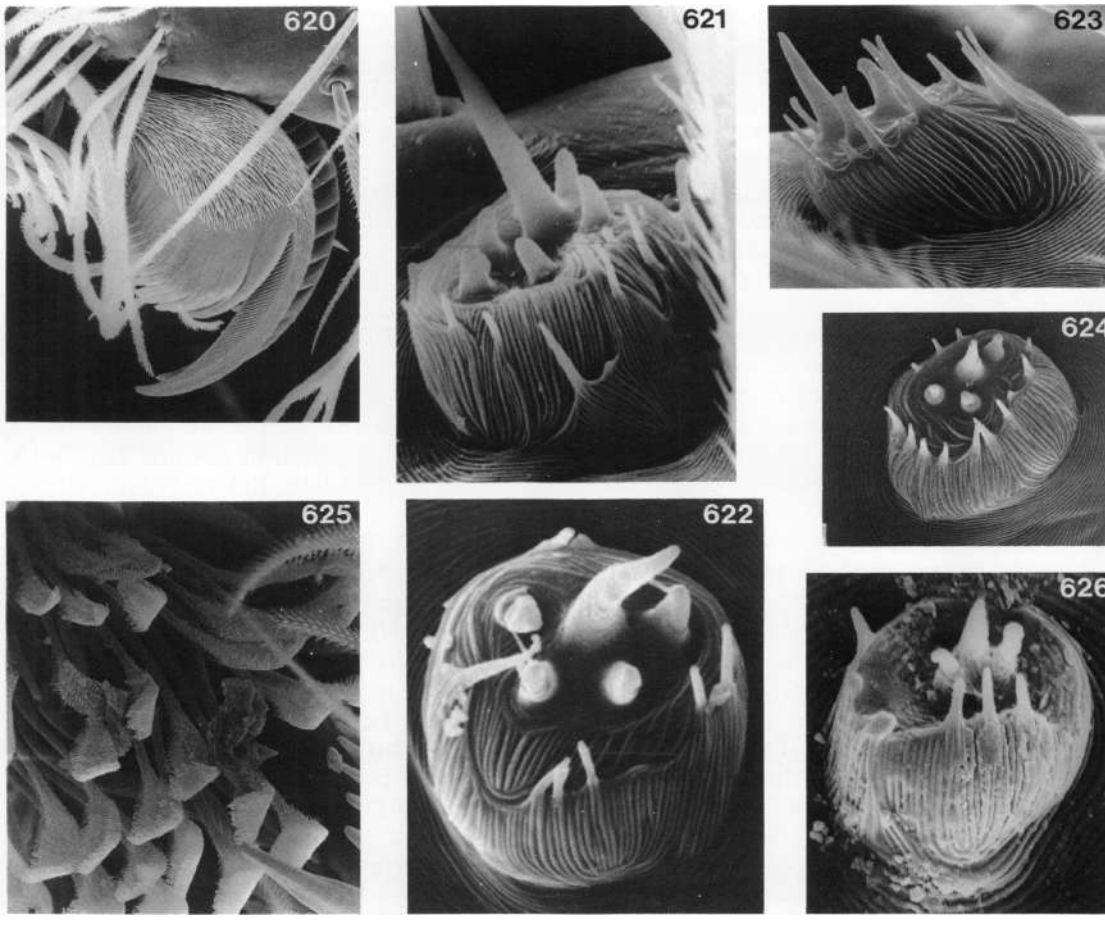
Maoriata vulgaris, new species
Figures 613–615, 623–625, 629, 630

TYPES: Male holotype and female paratype from litter at base of tussock at Flagstaff, near Dunedin, Otago, South Island, New Zealand (January 10, 1978; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name refers to the abundance of the species in Otago.

DIAGNOSIS: This species seems closely related to *M. magna* but can be separated by differences in the tarsal organ, female genitalia, and palpal bulb.

MALE: Total length 4.05. Carapace 1.83 long, 1.32 wide. Abdomen 2.05 long, 1.28 wide. Dorsal pattern of abdomen as in figures 613, 614, venter with shading near each posterior spiracle, at base of spinnerets, and irregularly down midline. Leg spination typical but with more numerous (about 20) spines encircling distal metatarsus IV. Tarsal organ similar to that of *M. magna* but with only four receptor lobes, longest only twice as long



FIGS. 620–626. Structure of *Maoriata*. 620–622. *M. magna* (Forster). 623–625. *M. vulgaris*, new species. 626. *M. montana*, new species. 620. Claws, leg I, male. 621–624, 626. Tarsal organ. 625. Claw tuft, leg I, female.

as others (figs. 623, 624). Claws as in *M. magna*.

	I	II	III	IV	Palp
Femur	1.68	1.56	1.41	1.92	0.56
Patella	0.60	0.60	0.57	0.68	0.32
Tibia	1.40	1.36	1.05	1.49	0.32
Metatarsus	1.44	1.40	1.24	1.76	—
Tarsus	0.60	0.60	0.53	0.68	0.32
Total	5.72	5.52	4.80	6.53	1.52

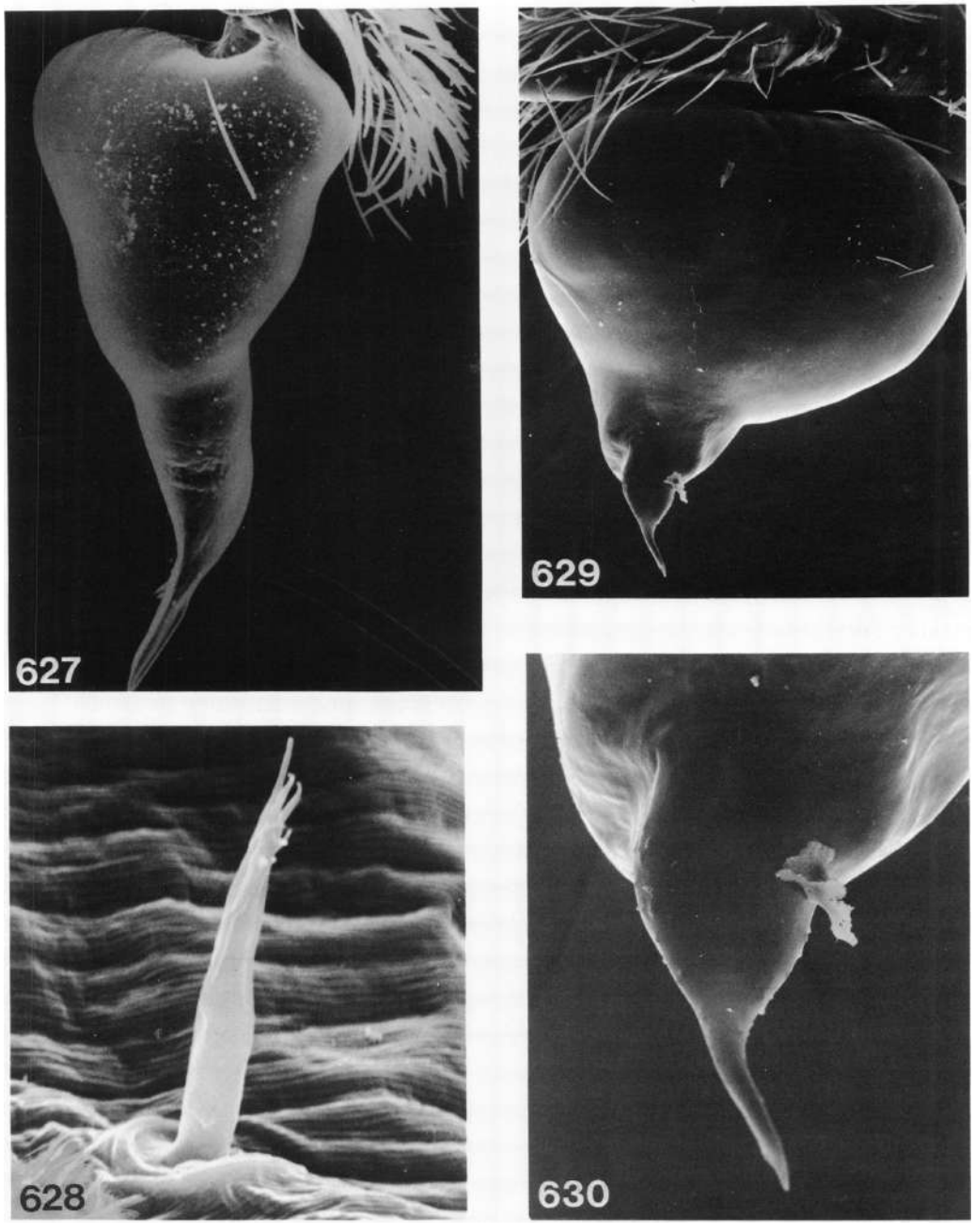
Palpal bulb squat, as wide as long (fig. 629); embolus short, wide proximally but distal half slender, terminating sharply (fig. 630).

FEMALE: Total length 4.81. Carapace 2.12 long, 1.61 wide. Abdomen 2.41 long, 1.53 wide. Somatic characters as in male.

	I	II	III	IV	Palp
Femur	1.83	1.82	1.72	2.24	0.64
Patella	0.84	0.80	0.64	0.77	0.41
Tibia	1.52	1.48	1.05	1.64	0.40
Metatarsus	1.64	1.64	1.40	2.00	—
Tarsus	0.72	0.69	0.56	0.72	0.71
Total	6.55	6.43	5.37	7.37	2.16

Genitalia (fig. 615) with posterior receptaculum large, secretory pores opening from small plates irregularly grouped over posterior half of sac.

OTHER MATERIAL EXAMINED: NEW ZEALAND: *South Island:* Flagstaff, litter at base of tussock, Dec. 10–Mar. 15, 1978–1981 (R. R. Forster, OMD, AMNH); Golden Point,



FIGS. 627–630. Structure of *Maoriata*. 627, 628. *M. magna* (Forster). 629, 630. *M. vulgaris*, new species. 627, 629, 630. Male palp. 628. Proprioreceptor bristle.

Macraes Flat, Jan. 7, 1967 (C. L. Wilton, OMD); Leith Saddle, leaf litter, Oct. 10, 1975 (R. R. Forster, OMD); Logan burn, elevation 900 m, pitfall in tussockland, Oct. 21–Dec. 15, 1982 (B. I. P. Barratt, OMD); Morrison Flat, at base of tussock, Sept. 13, 1966 (C. L. Wilton, OMD).

DISTRIBUTION: Tussockland in central and coastal Otago, South Island. This is a common species in tussockland, occurring along

with *Subantarctia otago* and *Wiltonia graminicola*. These three species of orsolobids are often the most abundant of all spiders found living in the litter around the base of tussock clumps in areas where the rainfall holds the humidity at a sufficiently high level.

Maoriata montana, new species
Figures 612, 618, 619, 626

TYPE: Female holotype collected under stone in an alpine herbfield at an elevation of 5400 ft on the Old Man Range, Otago, South Island, New Zealand (January 10, 1974; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name refers to the montane habitat.

DIAGNOSIS: This species can be separated from all others by the distinctive abdominal pigmentation, female genitalia, and the smaller number of receptor spines on the tarsal organ.

FEMALE: Total length 4.41. Carapace 1.82 long, 1.21 wide. Abdomen 2.69 long, 1.44 wide. Abdomen evenly shaded with purplish pigment on both dorsal and ventral surfaces; series of narrow crescent-shaped pale lines across dorsal surface form indistinct chevron pattern (figs. 612, 618). Leg spination: tibiae: III v0-0-2; IV p0-0-1, v0-0-2, r0-0-1; metatarsi III, IV p0-0-2, v0-0-2, r0-0-2. Tarsal organ with few marginal lobes and group of three contiguous short receptor lobes placed in middle of apical surface (fig. 626). Claws as in *M. magna*.

	I	II	III	IV	Palp
Femur	1.20	1.08	1.00	1.28	0.56
Patella	0.61	0.49	0.41	0.60	0.32
Tibia	0.96	0.96	0.76	1.04	0.32
Metatarsus	0.96	0.93	0.80	1.12	—
Tarsus	0.44	0.44	0.42	0.52	0.48
Total	4.17	3.90	3.39	4.56	1.68

Genitalia as in figure 619.

MALE: Unknown.

OTHER MATERIAL EXAMINED: An immature female collected with the type and a single female collected under a stone in a herbfield at an elevation of 5000 ft on the Pisa Range, Otago, South Island, on November 13, 1974, by R. R. Forster (OMD). The abdominal pigmentation in this second female is reduced, so that it appears more like the other two species. The tarsal organ, however, is similar to the Old Man Range specimens and the genitalia match in most characters, except that the posterior receptaculum is longer. The mountain ranges in central and southern Otago often have endemics restricted to each of them and the possibility remains that the Pisa specimen represents a further species.

DISTRIBUTION: Subalpine habitats in Otago, South Island.

WAIPORIA, NEW GENUS

TYPE SPECIES: *Waiporia wiltoni*, new species.

ETYMOLOGY: The generic name is taken from the locality where the type species was collected, and is feminine in gender.

DIAGNOSIS: This genus can be separated from all other chevroned genera by the simple tubular anterior receptaculum of the female genitalia, which is usually twisted or coiled, and by the dentition of the tarsal claws.

DESCRIPTION: Small to medium size (total length 1.9–3.1) orsolobids with strong chevron pattern on abdominal dorsum, without scuta; carapace with definite pattern; sternum usually pigmented. Chelicerae with two teeth on each margin. Sternum typical. Colulus with few hairs. Female genitalia with distinctive tubular anterior receptaculum, not distended distally, usually coiled or twisted; posterior receptaculum well developed, with numerous secretory pores, usually spaced singly. Legs with spines limited to distal surfaces of tibiae and metatarsi III and IV. Claws with reduced dentition on lateral flanges of male legs III and IV. Tarsal organ with marginal lobes on basal mound and long erect receptor spine in

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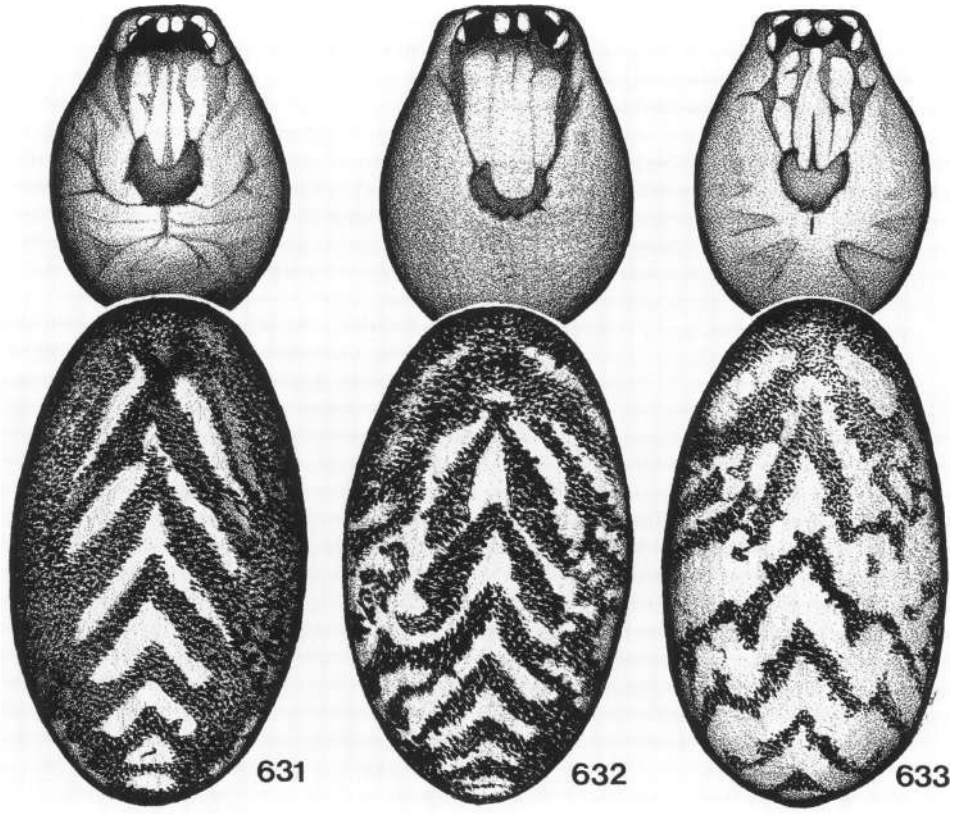
FIGS. 631–636. Dorsal view of carapace and abdomen of *Waiporia* females. 631. *W. owaka*, new species. 632. *W. chathamensis*, new species. 633. *W. extensa* (Forster). 634. *W. modica* (Forster). 635. *W. hawea*, new species. 636. *W. wiltoni*, new species.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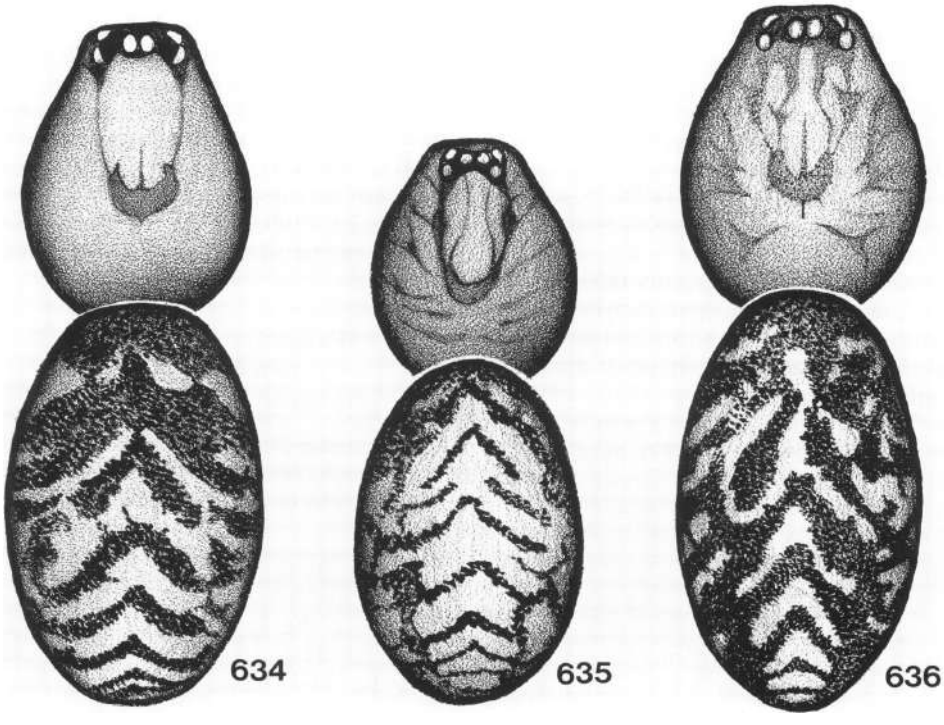
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addition to small receptor lobes; bothria with smooth hood. Male palpal bulb always simple, pyriform; embolus relatively slender, spinous. Spiracles typical, tracheal trunks not joined.

DISTRIBUTION: North and South Island. This widespread genus is commonly found in litter and moss on the forest floor, but also occurs in grassland. Like *Duripelta*, the spiders are often found in considerable numbers in litter; generally the two genera do not occur together, although they both have a wide distribution in both the North and South Islands and appear to have similar ecological requirements.

DISCUSSION: Five species originally described in *Ascuta* and *Pounamua* (=*Pounamuella*) by Forster (1956) belong in *Waiporia*. The original descriptions and illustrations are sufficient for identification of these species. Those data are not repeated here but some supplementary notes and illustrations (including figures of the female genitalia) are provided for comparison with the seven new species described below.

Waiporia wiltoni, new species
Figures 636, 643, 653, 654, 670, 675

TYPES: Male holotype and female paratype from moss on *Nothofagus* forest floor at Waipori Gorge, Otago, South Island, New Zealand (March 18, 1977; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name is a patronym in honor of C. L. Wilton, who first collected the species.

DIAGNOSIS: This species seems closely related to *W. owaka* but the two can be separated by differences in the abdominal pattern, the female genitalia, and the shape of the distal portion of the embolus.

MALE: Total length 2.00. Carapace 0.80 long, 0.64 wide. Abdomen 1.00 long, 0.60 wide. Pattern on carapace and dorsum of abdomen as in figure 636, abdominal venter with dark patch above epigastrium and irregular markings between spinnerets and furrow; sternum heavily shaded. Leg spination typical. Tarsal organ with four receptor lobes, median forming long spine, almost five times as high as basal mound (fig. 643). Claws with prominent lateral flange bearing eight teeth along margin (fig. 675).

	I	II	III	IV	Palp
Femur	0.60	0.56	0.48	0.68	0.24
Patella	0.23	0.24	0.20	0.28	0.16
Tibia	0.48	0.40	0.32	0.56	0.17
Metatarsus	0.42	0.40	0.32	0.48	–
Tarsus	0.24	0.24	0.24	0.24	0.19
Total	1.97	1.84	1.56	2.24	0.76

Bulb squat, wider than long; embolus long, slender, curved distally (figs. 653, 654).

FEMALE: Total length 2.12. Carapace 0.92 long, 0.76 wide. Abdomen 1.16 long, 0.72 wide. Somatic characters as in male.

	I	II	III	IV	Palp
Femur	0.64	0.60	0.52	0.77	0.24
Patella	0.36	0.28	0.24	0.36	0.15
Tibia	0.52	0.44	0.35	0.60	0.16
Metatarsus	0.48	0.44	0.40	0.64	–
Tarsus	0.32	0.31	0.28	0.28	0.24
Total	2.32	2.07	1.79	2.65	0.79

Genitalia (fig. 670) with anterior receptaculum sinuous distally; posterior receptaculum constricted over posterior half, where surface closely covered with pores.

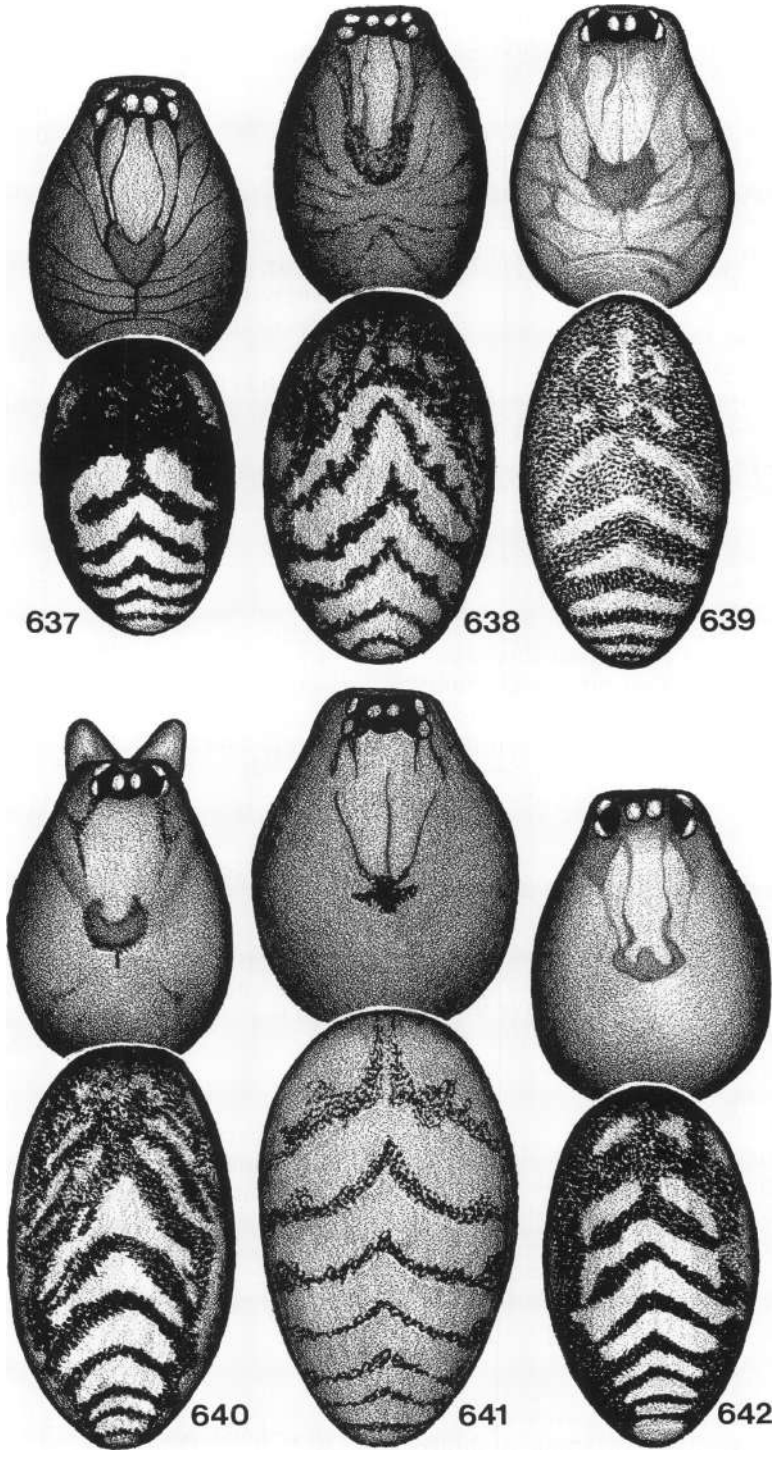
OTHER MATERIAL EXAMINED: Numerous specimens collected with the types, from moss and litter in *Nothofagus* forest at the type locality from September 20 to February 12, 1966–1980, by C. L. Wilton and R. R. Forster (OMD, AMNH), and from litter in *Leptospermum* scrub at the type locality on November 13, 1970, by R. R. Forster (OMD).

DISTRIBUTION: Waipori, Otago, South Island.

Waiporia extensa (Forster), new combination
Figures 633, 646, 658, 664, 677

Ascuta extensa Forster, 1956, p. 124, figs. 63–65 (male holotype from Kakahu, South Canterbury, South Island, New Zealand, in CMC, examined.

NOTE: The tarsal organ has three receptor lobes, set in a transverse row, of which the median is the largest, equalling the basal mound in height (fig. 646). The female genitalia (fig. 664) have the anterior receptacu-



FIGS. 637–642. Dorsal view of carapace and abdomen of *Waiporia*. 637, 638. *W. tuata*, new species, male, female. 639. *W. hornabrooki* (Forster), female. 640. *W. mensa* (Forster), male. 641. *W. ruahine*, new species, male. 642. *W. egmont*, new species, male.

lum long and strongly convoluted; the posterior receptaculum is well developed, with the secretory pores closely spaced on the posterior surface. The leg spination is typical for the genus. The lateral flanges of the claws have only four teeth (fig. 677). The tip of the embolus is hooked (fig. 658). The dorsal body pigmentation is shown in figure 633.

DISTRIBUTION: This species was recorded from a number of localities in South Canterbury, South Island, and further collecting has not extended the range. Most of the specimens have been collected from forest litter.

Waiporia modica (Forster), new combination
Figures 634, 649, 657, 669

Ascuta modica Forster, 1956, p. 114, figs. 44–46 (male holotype from Kennedy's Bush, Christchurch, Canterbury, South Island, New Zealand, in CMC, examined).

NOTE: This species was established on the basis of a single male that on palpal characters was considered to be closely related to *W. mensa* (Forster) from the Nelson region of the South Island. Further material, including females, from Kaituna Valley, Banks Peninsula, has been available for study. It is now evident that the species is closely related to *W. extensa* (Forster), and fits a common pattern of speciation in which the Peninsula fauna is distinct from, but related to, that found in inland Canterbury.

MALE: See Forster (1956); we have included an illustration of the embolic portion of the palpal bulb (fig. 657), which is longer than that of *W. extensa*.

FEMALE: Total length 2.47. Carapace 1.05 long, 0.84 wide. Abdomen 1.43 long, 0.87 wide. Dorsal patterning of carapace and abdomen (fig. 634) similar to that of male; abdominal pattern similar to that of *W. extensa* but chevrons more prominent; sternum pigmented marginally, with distinct median longitudinal band. Leg spination typical. Tarsal organ (fig. 649) little different from that of *W. extensa* (although original illustration of organ as observed by light microscopy indicated that median receptor spine is shorter than in *W. extensa*, SEM examination shows it approximately equal in length). Claws typical.

	I	II	III	IV	Palp
Femur	0.76	0.76	0.63	0.85	0.32
Patella	0.31	0.31	0.28	0.31	0.16
Tibia	0.55	0.55	0.44	0.64	0.19
Metatarsus	0.53	0.53	0.47	0.67	—
Tarsus	0.28	0.28	0.25	0.28	0.28
Total	2.43	2.43	2.07	2.75	0.95

Genitalia (fig. 669) similar to those of *W. extensa*, but anterior receptaculum not so strongly convoluted and transverse muscle plates differently shaped.

NEW RECORD: A series of males and females taken in leaf litter in mixed forest in Kaituna Valley, Banks Peninsula, Canterbury, South Island, on May 24, 1975, by R. R. Forster (OMD, AMNH).

DISTRIBUTION: Banks Peninsula, South Island.

Waiporia algida (Forster), new combination
Figure 668

Ascuta algida Forster, 1956, p. 112, figs. 41–43 (male holotype from Mount Algidus, Canterbury, South Island, New Zealand, in CMC, examined).

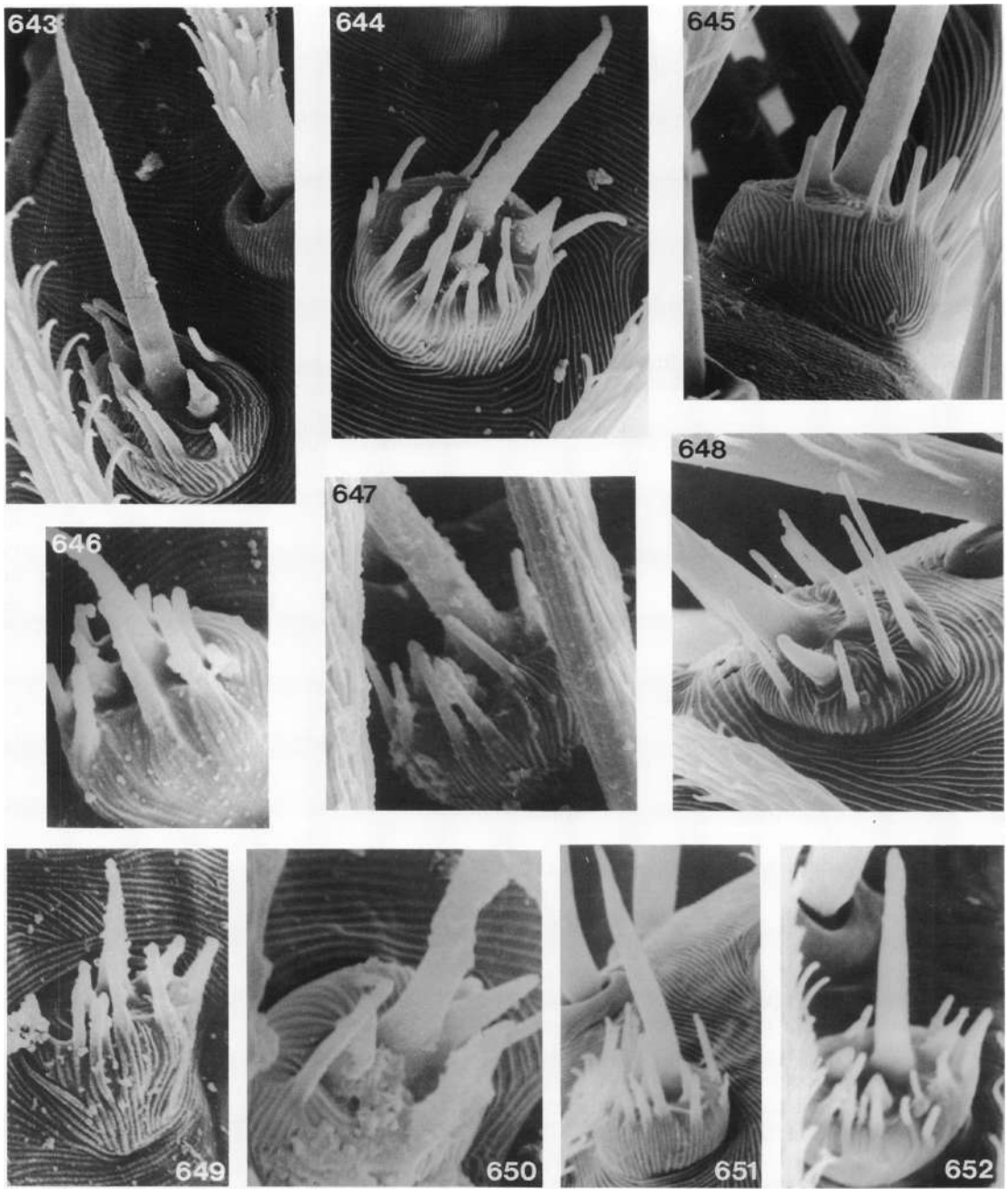
NOTE: The tarsal organ is similar to those of *W. extensa* and *W. modica* and the teeth on the lateral flange of the claws are reduced to four as in those species. The female genitalia are of the same type, differing only in detail (fig. 668): the anterior receptaculum is shorter and less convoluted than in *W. extensa* but similar to that of *W. modica*. The dorsal patterning is similar to that of *W. extensa*. The male bulb is closest to that of *W. extensa* but the embolus is straight, not slightly curved as in that species.

DISTRIBUTION: Known only from the type series from the South Island. The validity of the species will need to be reconsidered when more material becomes available.

Waiporia mensa (Forster), new combination
Figures 640, 644, 671

Ascuta mensa Forster, 1956, p. 116, figs. 47–49 (male holotype from Flora Track, Nelson, South Island, New Zealand, in NMW, examined).

NOTE: The dorsal patterning (fig. 640) shows a strong chevron pattern and (usually)



FIGS. 643–652. Tarsal organ of *Waiporia*. 643. *W. wiltoni*, new species. 644. *W. mensa* (Forster). 645. *W. ruahine*, new species. 646. *W. extensa* (Forster). 647. *W. chathamensis*, new species. 648. *W. owaka*, new species. 649. *W. modica* (Forster). 650. *W. egmont*, new species. 651. *W. hawea*, new species. 652. *W. tuata*, new species.

irregular shading on the anterior dorsal surface. The tarsal organ has three small receptor lobes in addition to the long median spine (fig. 644). The median spine is at least three

times the height of the basal mound. The lateral flanges of the claws are strong, with 11–13 teeth. The female genitalia (fig. 671) have the anterior receptaculum sinuous; in some specimens the distal portion is slightly distended and occasionally furnished with a small apical lobe. The posterior receptaculum is longer than wide, with the secretory region well-defined and occupying about one-half of the surface. Unlike all other species, the pores are grouped and irregularly scattered over the surface. The embolus is slender and slightly curved.

DISTRIBUTION: Further material from a number of localities in the Nelson region, South Island, has been available. The species appears to be widespread in that area, being recorded from near sea level to subalpine altitudes.

Waiporia hornabrooki (Forster), new combination

Figures 639, 673

Pounamua hornabrooki Forster, 1956, p. 156, figs. 124–129 (male holotype from Manapouri-Doubtful Sound Track, Fiordland, South Island, New Zealand, in CMC, examined).

NOTE: This species was originally placed in *Pounamua* (now *Pounamuella*) because of the extensive abdominal pigmentation, which obscures the basic chevron pattern (fig. 639). Because the female genitalia were not examined at that time, the true relationships of the species were not evident. Those genitalia are distinctive, with a spherical posterior receptaculum that overlaps the muscle plates, but the anterior receptaculum is typical for *Waiporia* (fig. 673). The tarsal organ bears three receptor spines, of which the median is between two and three times the height of the basal mound. The lateral flanges of the claws bear eight or nine teeth.

DISTRIBUTION: Known only from the type locality and the northern shore of Lake Manapouri, Fiordland, South Island.

Waiporia owaka, new species

Figures 631, 648, 661, 672, 674

TYPES: Male holotype and female paratype from leaf litter in mixed forest at Catlins, near Owaka, Tautuku, Otago, South Island, New Zealand (February 14, 1979; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species can be separated from *W. wiltoni* by the more extensive pigmentation of the abdomen and by differences in the female genitalia and male embolus.

MALE: Total length 2.40. Carapace 0.96 long, 0.80 wide. Abdomen 1.36 long, 0.80 wide. Pigmentation of body (fig. 631) dense on dorsal and lateral surfaces, leaving unpigmented areas along dorsal surface standing out as acute chevrons; abdominal venter with two bands extending from sides of spinnerets to epigastric furrow, without pigment beyond furrow except for two median spots; sternum with distinct median longitudinal band, expanded posteriorly, and three intercoxal patches along lateral margins. Leg spination typical. Tarsal organ similar to that of *W. wiltoni* but with only two smaller receptor lobes (figs. 648). Claws with prominent lateral flange margined by 11 teeth (fig. 674).

	I	II	III	IV	Palp
Femur	0.88	0.81	0.72	0.96	0.28
Patella	0.40	0.36	0.32	0.40	0.16
Tibia	0.68	0.60	0.52	0.76	0.20
Metatarsus	0.64	0.60	0.52	0.76	–
Tarsus	0.32	0.32	0.28	0.36	0.20
Total	2.92	2.69	2.36	3.24	0.84

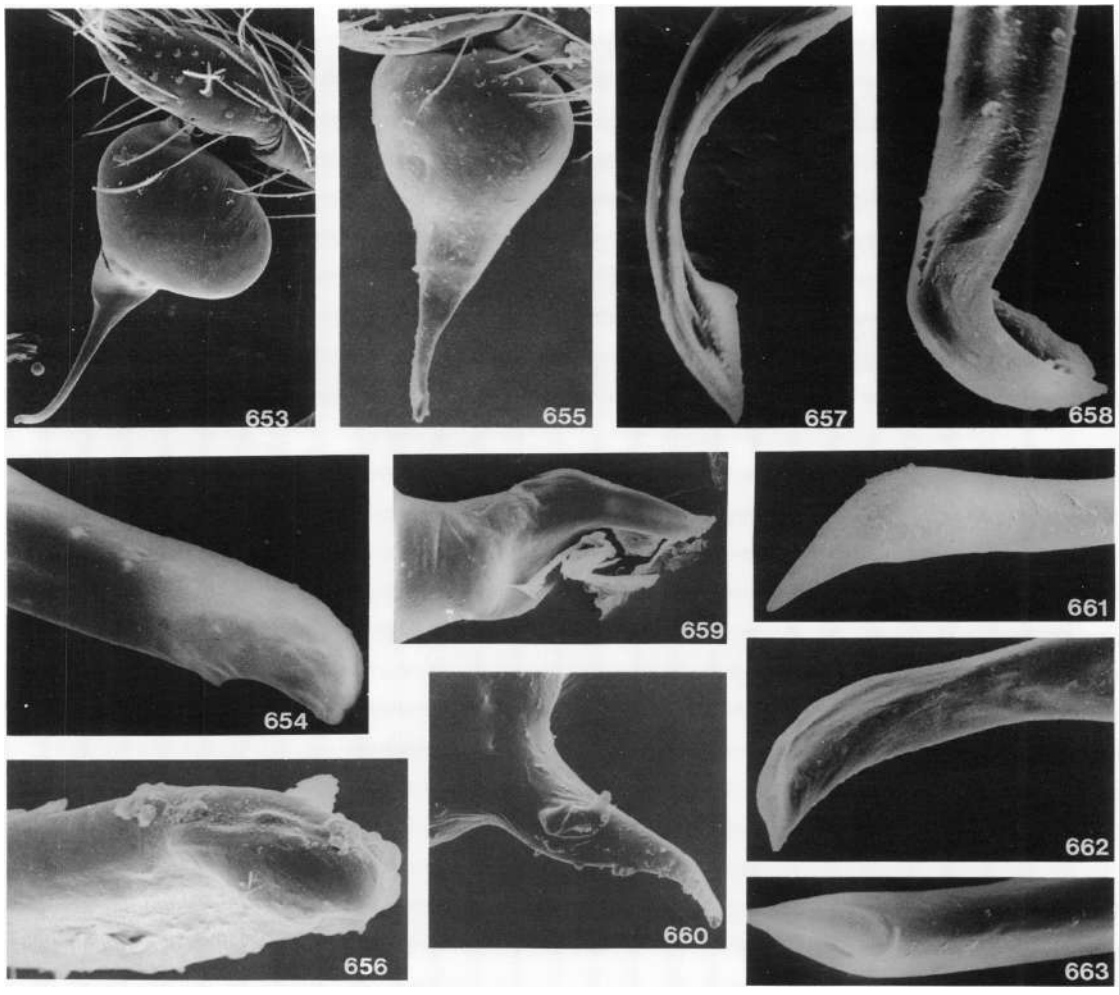
Palpal bulb similar to that of *W. wiltoni* but distal portion of embolus not curved, terminating obliquely (fig. 661).

FEMALE: Total length 2.64. Carapace 1.12 long, 0.88 wide. Abdomen 1.48 long, 0.92 wide. Somatic characters as in male.

	I	II	III	IV	Palp
Femur	0.88	0.84	0.80	0.96	0.36
Patella	0.40	0.40	0.36	0.44	0.16
Tibia	0.72	0.64	0.52	0.80	0.20
Metatarsus	0.68	0.64	0.56	0.84	–
Tarsus	0.36	0.28	0.28	0.32	0.32
Total	3.04	2.80	2.52	3.36	1.04

Genitalia (fig. 672) similar to those of *W. wiltoni* but differing in shape of transverse plates and more strongly twisted anterior receptaculum.

OTHER MATERIAL EXAMINED: NEW ZEALAND: *South Island:* Otago: Catlins, near



FIGS. 653–663. Male palp of *Waiporia*. 653, 654. *W. wiltoni*, new species. 655, 656. *W. egmont*, new species. 657. *W. modica* (Forster). 658. *W. extensa* (Forster). 659. *W. ruahine*, new species. 660. *W. chathamensis*, new species. 661. *W. owaka*, new species. 662. *W. tuata*, new species. 663. *W. hawea*, new species.

Puketiro Road, litter in mixed forest, Aug. 31, 1966 (R. R. Forster, C. L. Wilton, OMD), leaf litter, Jan. 21, 1972 (J. S. Dugdale, EDA), leaf litter in mixed forest, Feb. 19, 1978 (R. R. Forster, OMD); Owaka, Purakanui Falls, Berlese sample of forest litter, Jan. 16, 1978 (S. and J. Peck, AMNH).

DISTRIBUTION: Catlins State Forest, Otago, South Island.

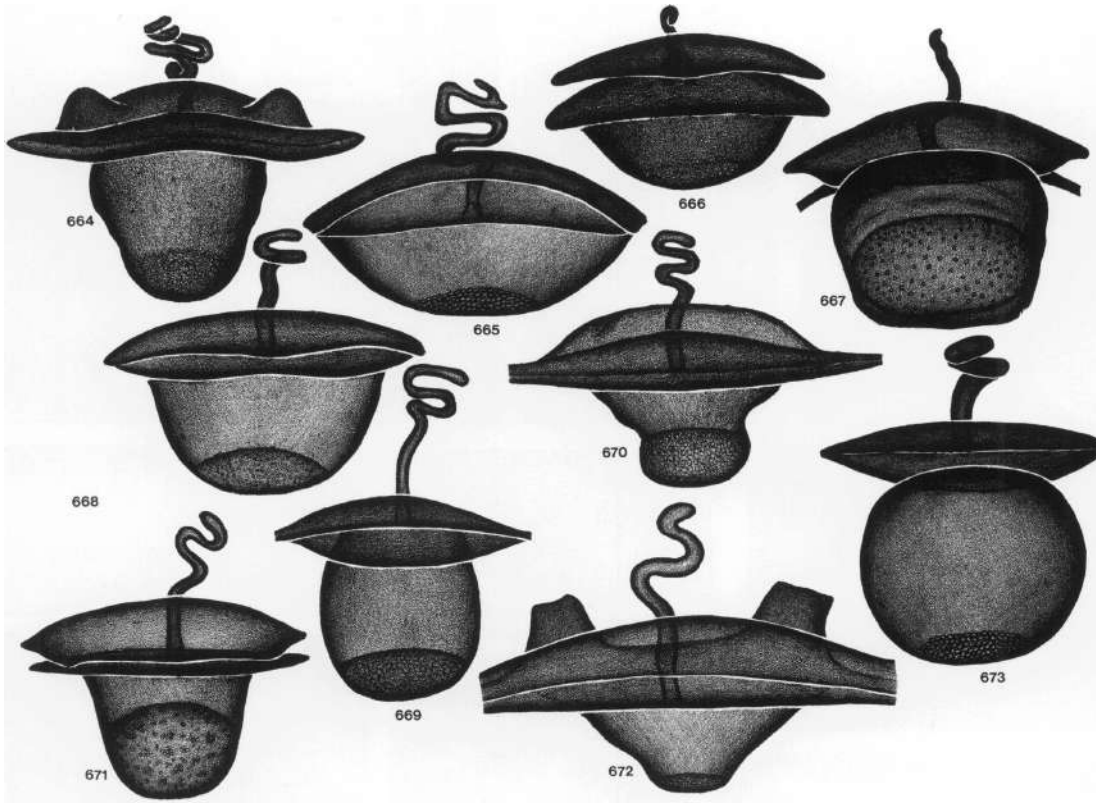
Waiporia hawea, new species
Figures 635, 651, 663, 666

TYPES: Male holotype and female paratype from leaf litter in mixed forest at Kidds Bush, Lake Hawea, Otago, South Island, New Zealand (April 12, 1979; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species seems closely related to *W. wiltoni* but can be separated from it by the shorter median receptor spine on the tarsal organ and by differences in the male and female genitalia.

MALE: Total length 2.08. Carapace 0.84 long, 0.68 wide. Abdomen 1.16 long, 0.64 wide. Dorsal pattern (fig. 635) with chevrons narrow, extended laterally; abdominal venter



FIGS. 664–673. Female genitalia of *Waiporia*, from above. 664. *W. extensa* (Forster). 665. *W. chathamensis*, new species. 666. *W. hawea*, new species. 667. *W. tuata*, new species. 668. *W. algida* (Forster). 669. *W. modica* (Forster). 670. *W. wiltoni*, new species. 671. *W. mensa* (Forster). 672. *W. owaka*, new species. 673. *W. hornabrooki* (Forster).

with two bands extending between spinnerets and furrow and two patches on midsurface of epigastrium; sternum with median longitudinal band joined by three transverse bands originating at intercoxal spaces. Leg spination typical. Tarsal organ with four receptor lobes; median lobe almost three times as high as basal mound (fig. 651). Claws with prominent lateral flange bearing eight teeth.

	I	II	III	IV	Palp
Femur	0.64	0.64	0.52	0.80	0.24
Patella	0.28	0.24	0.24	0.28	0.16
Tibia	0.56	0.48	0.40	0.62	0.20
Metatarsus	0.48	0.48	0.39	0.60	—
Tarsus	0.32	0.28	0.24	0.28	0.20
Total	2.28	2.12	1.79	2.58	0.80

Tip of embolus sharply pointed (fig. 663).

FEMALE: Total length 2.24. Carapace 0.84 long, 0.72 wide. Abdomen 1.29 long, 0.82 wide. Somatic characters as in male.

	I	II	III	IV	Palp
Femur	0.76	0.64	0.56	0.76	0.28
Patella	0.28	0.32	0.28	0.32	0.16
Tibia	0.56	0.48	0.40	0.65	0.23
Metatarsus	0.48	0.48	0.40	0.65	—
Tarsus	0.32	0.29	0.28	0.35	0.28
Total	2.40	2.21	1.92	2.73	0.95

Genitalia (fig. 666) with anterior receptaculum slender, convoluted; posterior receptaculum shallow, wider than long, with secretory pores grouped on posterior surface.

OTHER MATERIAL EXAMINED: Further specimens collected with the types and from litter at the type locality on January 28, 1975, and January 21, 1978, by J. C. Watt (EDA).

DISTRIBUTION: Known only from Otago, South Island.

Waiporia chathamensis, new species
Figures 632, 647, 660, 665

TYPES: Male holotype from litter on Southeast Island, Chatham Islands, New Zealand (November 9, 1970; J. I. Townsend), and female paratype from litter in limestone quarry on Chatham Island (February 11, 1967; Entomology Division Survey), deposited in EDA.

ETYMOLOGY: The specific name refers to the islands from which the types originate.

DIAGNOSIS: This species can be separated from all others by the form of the female anterior receptaculum and the shape of the male embolus. Although the female genitalia are similar to those of the Canterbury species *W. modica* and *W. algida*, the tarsal organ has four receptor lobes (as in the more southern species) rather than three.

MALE: Total length 2.64. Carapace 1.05 long, 0.88 wide. Abdomen 1.44 long, 0.88 wide. Dorsal patterning (fig. 632) with lateral and ventral surfaces of abdomen heavily pigmented except for epigastric region (pale with small patch on midsurface); sternum with median longitudinal band and three intercoxal patches along each lateral margin. Leg spination typical. Tarsal organ with three small receptor lobes and long median spine, four times as high as basal mound (fig. 647). Claws typical.

	I	II	III	IV	Palp
Femur	0.84	0.80	0.69	1.00	0.36
Patella	0.32	0.32	0.24	0.40	0.20
Tibia	0.80	0.72	0.53	0.76	0.20
Metatarsus	0.69	0.60	0.57	0.80	—
Tarsus	0.36	0.36	0.33	0.39	0.25
Total	3.01	2.80	2.36	3.35	1.01

Palpal bulb one and one-half times as wide as long; embolic region relatively short, wide at base, narrowing distally, slightly curved (fig. 660).

FEMALE: Total length 3.05. Carapace 1.08 long, 0.91 wide. Abdomen 1.99 long, 0.93 wide. Somatic characters as in male.

	I	II	III	IV	Palp
Femur	1.02	0.92	0.88	1.12	0.36
Patella	0.48	0.44	0.43	0.56	0.23
Tibia	0.85	0.72	0.68	0.88	0.23
Metatarsus	0.80	0.75	0.71	0.96	—
Tarsus	0.36	0.32	0.32	0.36	0.32
Total	3.51	3.15	3.02	2.88	1.14

Genitalia (fig. 665) similar to those of *W. modica* and *W. algida* but distinguished by differences in shape of both anterior and posterior receptacula.

OTHER MATERIAL EXAMINED: NEW ZEALAND: *Chatham Islands:* Southeast Island, elevation 100 ft, litter, Nov. 10, 1970 (J. I. Townsend, EDA), elevation 600 ft, litter, Nov. 8, 1970 (J. I. Townsend, EDA).

DISTRIBUTION: Known only from the Chatham Islands.

Waiporia egmont, new species
Figures 642, 650, 655, 656, 676

TYPE: Male holotype taken from moss at an elevation of 3000 ft at Wilkies Pools, Mount Egmont, Taranaki, North Island, New Zealand (June 18, 1965; J. I. Townsend), deposited in EDA.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species seems closely related to *W. ruahine* but the two can be separated by the different abdominal pattern and the shape of the male embolus.

MALE: Total length 2.16. Carapace 1.04 long, 0.72 wide. Abdomen 1.12 long, 0.68 wide. Dorsal coloration (fig. 642) with chevron pattern strong, merging with dark lateral shading; abdominal venter with small patch near each posterior spiracle; sternum with faint median longitudinal band and small intercoxal marginal patches. Leg spination typical except lateral spines on tibiae III and IV reduced to bristles. Tarsal organ with three receptor lobes in transverse row, median lobe four times as high as basal mound (fig. 650). Claws with four teeth on lateral flanges (fig. 676).

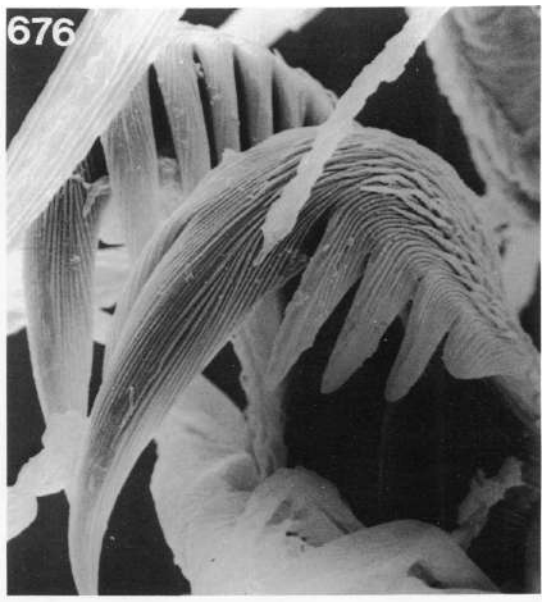
	I	II	III	IV	Palp
Femur	0.80	0.76	0.64	0.92	0.32
Patella	0.36	0.40	0.32	0.41	0.20
Tibia	0.65	0.62	0.44	0.68	0.24
Metatarsus	0.61	0.58	0.48	0.72	—
Tarsus	0.42	0.36	0.36	0.42	0.28
Total	2.84	2.72	2.24	3.15	1.04

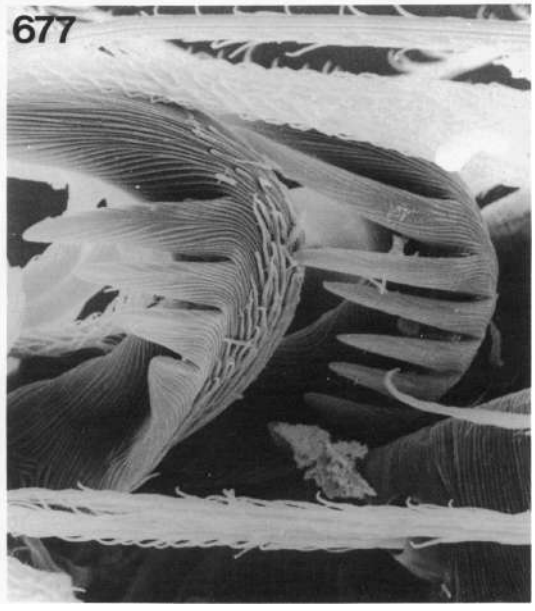
Palpal bulb narrowing evenly from straight, distally unexpanded embolus (figs. 655, 656).

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Subalpine habitats on Mount Egmont, North Island.





FIGS. 674–677. Claws of leg I of *Waiporia*. 674. *W. owaka*, new species, female. 675. *W. wiltoni*, new species, female. 676. *W. egmont*, new species, male. 677. *W. extensa* (Forster), male.

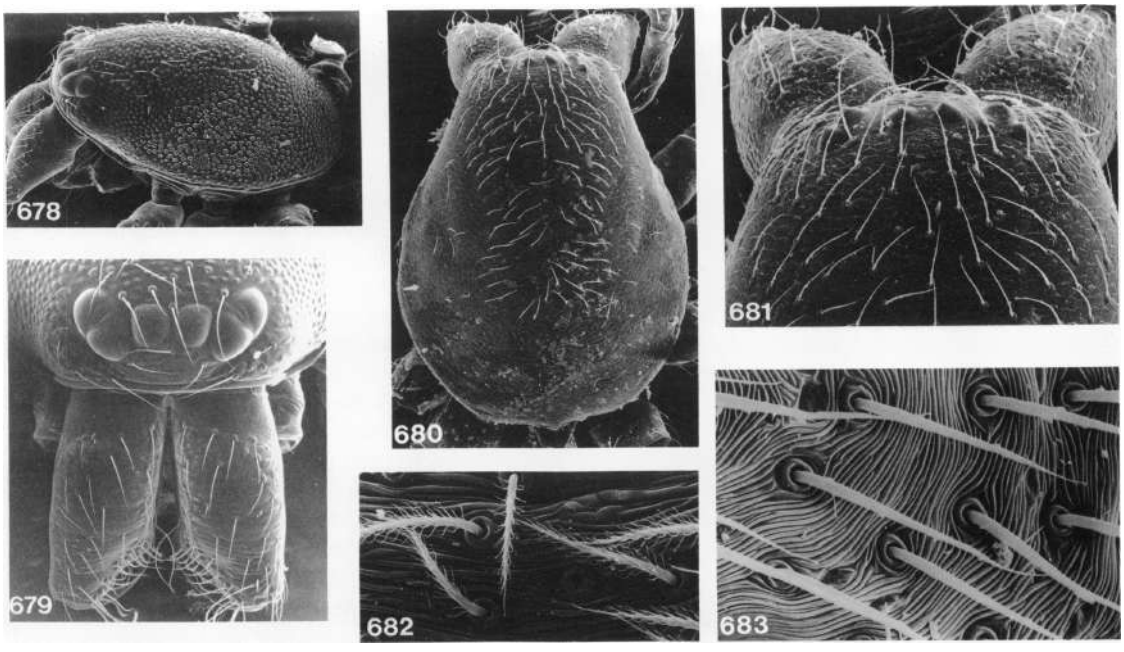
Waiporia ruahine, new species
Figures 641, 645, 659

TYPE: Male holotype taken from litter at an elevation of 6500 ft at Armstrong Saddle, Ruahine Ranges, North Island, New Zealand (February 28, 1970; G. W. Ramsay), deposited in EDA.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species seems closely related to *W. egmont* but can be easily separated by the patterning of the abdomen and the shape of the embolus.

MALE: Total length 2.49. Carapace 1.12



FIGS. 678–683. Structure of *Duripelta*. 678, 679. *D. mawhero*, new species. 680, 681. *D. pallida* (Forster). 682. *D. australis* Forster. 683. *D. paringa*, new species. 678. Male carapace, from side. 679. Eyes and chelicerae of male, from front. 680, 681. Male carapace, from above. 682, 683. Abdominal hairs, female.

long, 0.88 wide. Abdomen 1.44 long, 0.80 wide. Dorsal coloration (fig. 641) with abdominal pattern formed from thin but distinct chevrons not extending down lateral margins, which are lightly shaded with anterior patch and thin line extending back to spinnerets; carapace pattern weak, abdominal venter with median patch at furrow and two patches midway between furrow and spinnerets. Leg spination typical except distolateral tibial spines lacking. Tarsal organ with three receptor lobes, median very long, approximately six times as high as basal mound (fig. 645). Claws typical.

	I	II	III	IV	Palp
Femur	1.00	0.97	0.92	1.05	0.32
Patella	0.44	0.41	0.36	0.44	0.21
Tibia	0.73	0.72	0.67	0.84	0.22
Metatarsus	0.75	0.72	0.67	0.93	—
Tarsus	0.40	0.37	0.29	0.40	0.21
Total	3.32	3.19	2.91	3.66	0.96

Palpal bulb (fig. 659) with embolus short (as in *W. chathamensis*) but flattened to form shallow keel on ventral surface, terminating sharply.

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Subalpine in the Ruahine Ranges, North Island.

Waiporia tuata, new species
Figures 637, 638, 652, 662, 667

TYPES: Male holotype and female paratype from moss in *Nothofagus* forest at Tuatapere, Southland, South Island, New Zealand (December 1, 1966; C. L. Wilton), deposited in OMD.

ETYMOLOGY: The specific name is an arbitrary combination of letters.

DIAGNOSIS: This species can be separated from all others by the form of the male and female genitalia.

MALE: Total length 2.16. Carapace 1.03 long, 0.77 wide. Abdomen 1.28 long, 0.72 wide. Dorsal pattern (fig. 637) with anterior and upper lateral surfaces heavily pigmented but ventral and lower half of lateral surfaces pale apart from patches near posterior spiracles and spinnerets; sternum evenly shaded. Leg spination typical. Tarsal organ with

four receptor spines, median slightly more than three times height of basal mound (fig. 652). Claws typical.

	I	II	III	IV	Palp
Femur	0.76	0.73	0.65	0.84	0.32
Patella	0.32	0.32	0.24	0.32	0.20
Tibia	0.60	0.60	0.45	0.73	0.20
Metatarsus	0.55	0.52	0.48	0.73	—
Tarsus	0.32	0.32	0.24	0.32	0.19
Total	2.55	2.49	2.06	2.94	0.91

Embolus narrowed behind tip (fig. 667).

FEMALE: Total length 2.76. Carapace 1.03 long, 0.87 wide. Abdomen 1.72 long, 1.00 wide. Dorsal patterning (fig. 638) with abdominal pigmentation not as heavy as in male, with chevrons narrower, more widely spaced. Other somatic characters as in male.

	I	II	III	IV	Palp
Femur	0.80	0.80	0.73	0.88	0.28
Patella	0.41	0.37	0.31	0.41	0.20
Tibia	0.64	0.60	0.45	0.72	0.20
Metatarsus	0.56	0.56	0.45	0.75	—
Tarsus	0.28	0.28	0.24	0.31	0.28
Total	2.69	2.61	2.18	3.07	0.96

Genitalia distinctive (fig. 667); anterior receptaculum only weakly sinuous, more slender than usual for genus, distal portion showing number of conspicuous pores not observed in any other species; posterior receptaculum large, overhanging muscle plates, secretory pores scattered over large, clearly defined poreplate.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Southland, South Island.

DURIPELTA FORSTER

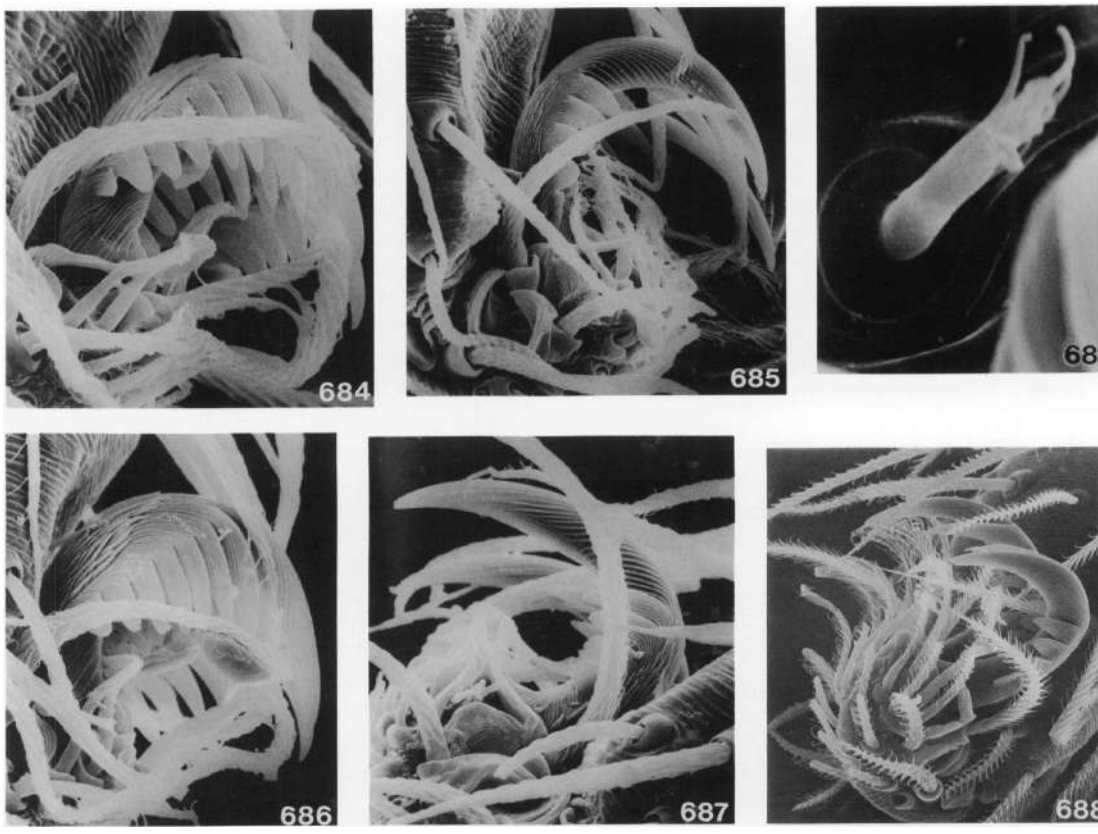
Duripelta Forster, 1956, p. 139 (type species by original designation *Duripelta borealis* Forster).

DIAGNOSIS: This genus can easily be separated from all other orsolobids by the distinctly granulate surface of the carapace and sternum, the development of abdominal scuta, and the distinctive female genitalia.

DESCRIPTION: Small orsolobids (total length 1.2–2.4) with carapace and sternum strongly granulate in pigmented species (figs. 678, 679), granulations weaker in unpigmented species (figs. 680, 681); abdominal scuta in most species, when present more strongly developed in males; in some species presence of both dorsal and ventral scuta in males may almost cover whole surface, whereas in others dorsal scutum may be absent; female scutum usually restricted to epigastric region but extending anteriorly to encircle petiole; larger species with distinct dorsal abdominal chevron pattern, smaller species generally unpatterned; abdominal hairs uniform in length, evenly distributed (figs. 682, 683). Eye diameters in larger species approximately one-ninth of head width but in unpigmented species may be as little as one-fifteenth of head width. Chelicerae with two teeth on each margin. Sternum slightly longer than wide. Colulus sclerotized, usually bearing five hairs. Female genitalia distinctive, with tubular anterior receptaculum, often expanded distally into prominent spherical sac; posterior receptaculum with characteristic irregular poreplates or lobes (except in *D. watti*, which has small receptaculum with evenly spaced pores). Legs clothed with plumose hairs but spines absent in all species except *D. alta* (which has few spines limited to distal surfaces of tibiae and metatarsi III and IV). Claws with different pectination on lateral flanges of anterior and posterior legs in both sexes; legs I and II with seven or eight teeth, III and IV with four or five; numerous hairs present below claws but smooth-stemmed hairs (which in other genera are spatulate distally and form distinct claw tuft) only weakly expanded (fig. 688). Tarsal organ uniform, basal mound smooth or with very few (one to four) marginal lobes; three or four subcontiguous receptor lobes, one extremely long, spiniform; bothria smooth or slightly indented; proprioreceptor bristles with smooth stem, distally branched (fig. 689). Bulb of male palp simple, embolus slender, spiniform, without secondary processes but variously modified distally where sperm duct opens. Spiracles typical, tracheal trunks not joined.

DISTRIBUTION: North and South Islands.

DISCUSSION: The described species can readily be separated into two groups on the basis of size, the presence or absence of patterning, and reduction in the size of the eyes. However, genitalic characters, particularly of females, suggest that those three somatic features are linked and may have developed in correlation a number of times. Field obser-



FIGS. 684–689. Structure of *Duripelta*. 684–688. *D. mawhero*, new species. 689. *D. australis* Forster. 684. Claws, leg I, male. 685. Claws, leg IV, male. 686. Claws, leg I, female. 687. Claws, leg IV, female. 688. Claws and onychial hairs, leg IV, male. 689. Proprioreceptor bristle.

vations suggest that the patterned species generally live in the upper layers of litter or moss, whereas the unpatterned species are found at deeper levels. It is probable that the unpatterned species are obligatory cryptozoic species and some may eventually be found to be primarily interstitial (as in *Anopsolobus subterraneus*).

Only three species were placed in *Duripelta* when the genus was established. The two pigmented species (*D. borealis* and *D. australis*) were thought to be widely distributed over the North and South Islands, respectively, with a restricted population of *D. borealis* also occurring in the northern tip of the South Island. The full collection from which the earlier conclusions were drawn was not available for study but additional material from a similar range of localities demonstrates clearly that the speciation pattern is actually much more complex and that more work will be needed before it can be completely understood. Meanwhile, we have described a number of new species and amended the distributional ranges for the previously described species. The one previously described unpatterned species (*D. minuta*) is retained in the genus and a number of other small, similarly unpatterned species are described. It also now appears that the minute unpatterned species described as *Ascuta pallida* should be placed in *Duripelta* despite the absence of definite abdominal scuta. This species is clearly related to *D. scuta*, which is strongly scutate.

The distribution of the patterned species does not extend to the southern portion of the South Island (southern Fiordland and Southland) or Stewart Island, and the absence of these spiders from this part of the country

seems real. It is probable, however, that further collecting will bring to light one or more unpatterned species on Stewart Island, as one unpatterned species is recorded below from the southern tip of the South Island.

Duripelta borealis Forster
Figures 8, 690–692, 697, 708, 719, 835, 849, 853–855

Duripelta borealis Forster, 1956, p. 139, figs. 83–91 (male holotype from Days Bay, Wellington, North Island, New Zealand, in NMW, examined).

NOTE: This species was originally recorded from numerous localities throughout the North Island, as well as from the northern part of Nelson and Marlborough. Further examination of some of the original material and fresh specimens from a similar range of localities shows that a number of species are involved which (although strikingly similar in general form and coloration; figs. 690–692) are readily separable on genitalic characters. The main differences are found in the female genitalia (not previously examined), but scans of the emboli have also brought to light constant differences in the shape of the distal portion.

The original description, which was based on the type specimens from Wellington, provides most of the necessary information but additional comments and illustrations on genitalic structures and the tarsal organ are provided here for comparison with the new species established below. The female genitalia (fig. 708) have the distal sac of the anterior receptaculum relatively large and the duct leading to the bursal cavity straight; the secretory plates associated with the posterior receptaculum are fused along the lateral surfaces but there are three smaller poreplates medially on the posterior surface. The distal portion of the embolus is slightly excavated and flanked by a definite ridge; the distal extension is curved and sharply pointed, with the sperm duct opening from a circular pore set well back from the apex (fig. 697). The tarsal organ (fig. 719) lacks marginal lobes on the basal mound; the receptor lobes are characterized by the long, slender median spine.

DISTRIBUTION: Wellington, Wairarapa, and probably extending north to the Coromandel Peninsula, North Island.

Duripelta hunua, new species
Figures 696, 707

TYPES: Male holotype and female paratype from litter taken at an elevation of 600 m at Kohukohunui, Hunua Range, Auckland, North Island, New Zealand (February 30, 1974; G. Kuschel), deposited in EDA.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species seems closely related to *D. borealis* but can be separated from it by differences in the male and female genitalia.

MALE: Total length 1.63. Carapace 0.80 long, 0.64 wide. Abdomen 0.84 long, 0.60 wide. Abdomen with dorsal and ventral scuta as in *D. borealis*; abdominal pattern similar but chevrons tending to be wider. Width of each eye approximately one-seventh of head width. Tarsal organ without lateral lobes, with three small receptor lobes grouped around base of long, median spine. Claws typical.

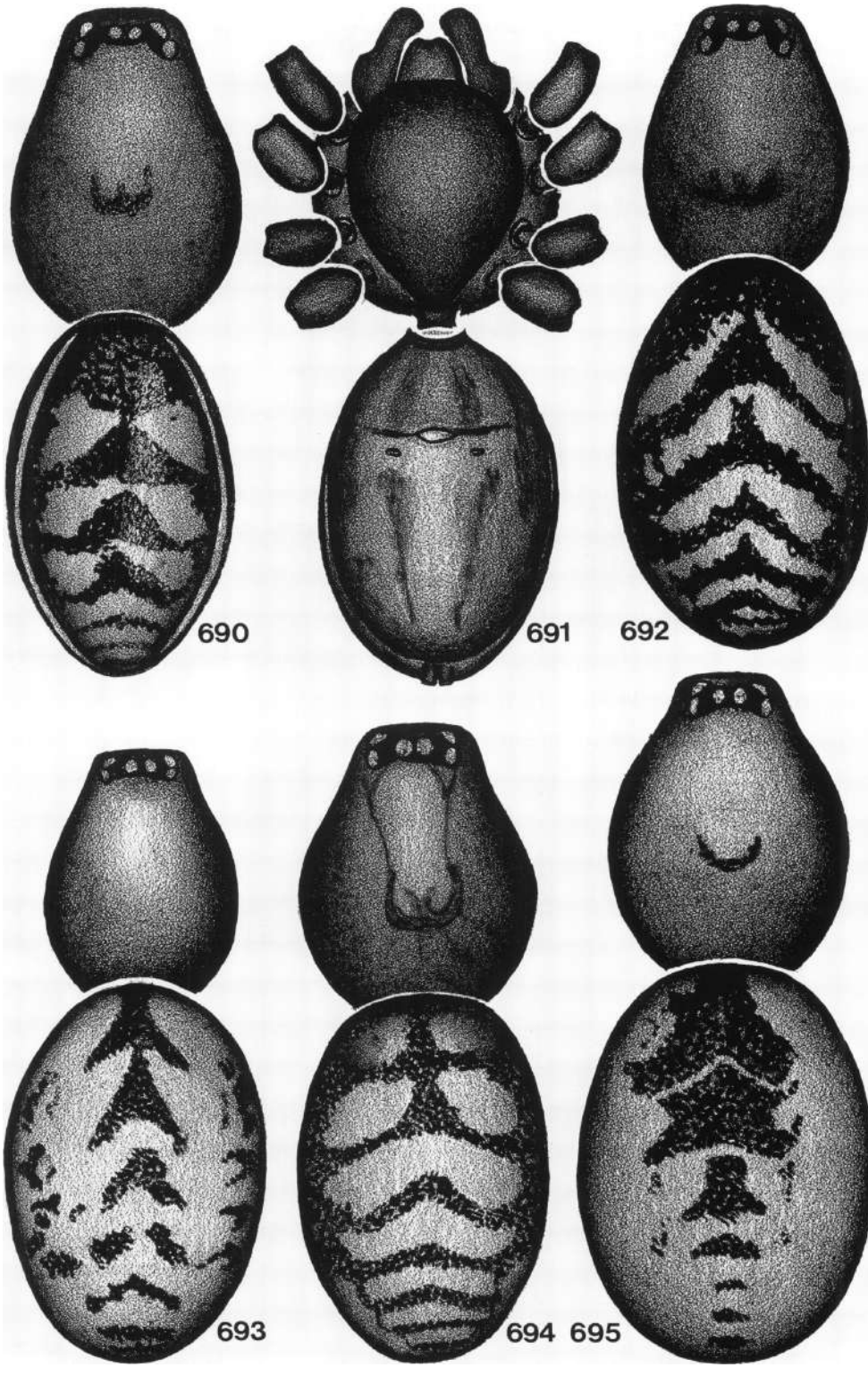
	I	II	III	IV	Palp
Femur	0.63	0.61	0.47	0.64	0.20
Patella	0.24	0.24	0.24	0.27	0.13
Tibia	0.48	0.48	0.31	0.49	0.13
Metatarsus	0.40	0.39	0.31	0.49	—
Tarsus	0.28	0.28	0.25	0.28	0.21
Total	2.03	2.00	1.58	2.17	0.67

Bulb similar in shape to that of *D. borealis* but distal point of embolus blunter, lateral ridge stronger (fig. 696).

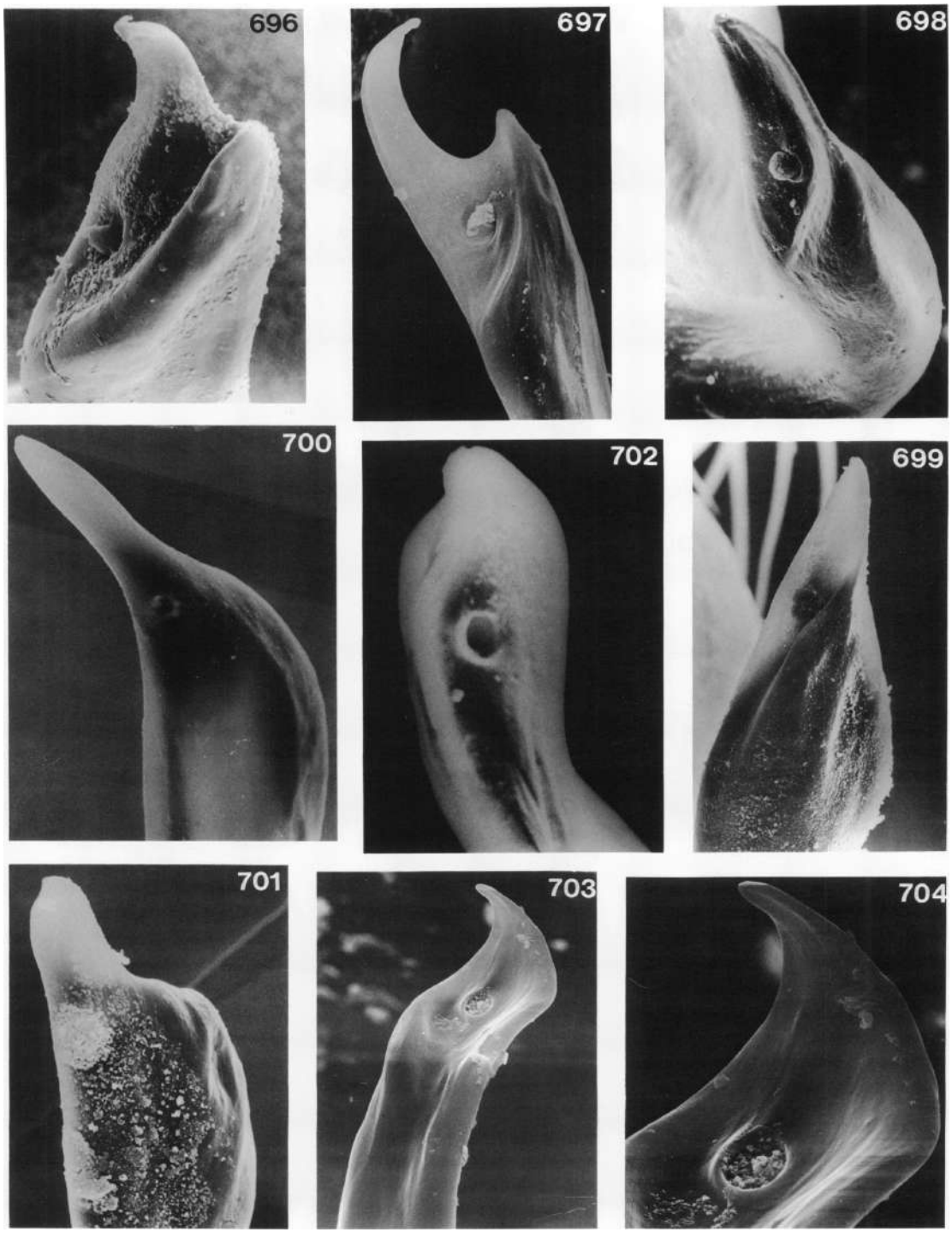
FEMALE: Total length 1.84. Carapace 0.92 long, 0.69 wide. Abdomen 1.12 long, 0.76 wide. Somatic characters as in male except dorsal scutum lacking and ventral scutum reduced to epigastric plate with extension on anterodorsal surface and narrow extensions back to tracheal spiracles

	I	II	III	IV	Palp
Femur	0.60	0.60	0.52	0.60	0.28
Patella	0.29	0.25	0.24	0.29	0.13
Tibia	0.44	0.44	0.33	0.44	0.15
Metatarsus	0.41	0.40	0.37	0.48	—
Tarsus	0.24	0.24	0.24	0.26	0.28
Total	1.98	1.93	1.70	2.07	0.84

Genitalia (fig. 707) similar to those of *D. bo-*



FIGS. 690–695. Body of *Duripelta*. 690–692. *D. borealis* Forster (690, 691 male, 692 female). 693. *D. peha*, new species, female. 694. *D. paringa*, new species, female. 695. *D. australis* Forster, female.



FIGS. 696–704. Tip of embolus of *Duripelta*. 696. *D. hunua*, new species. 697. *D. borealis* Forster. 698, 699. *D. paringa*, new species (698 Waiho, 699 Punakaiki). 700. *D. townsendi*, new species. 701. *D. egmont*, new species. 702. *D. australis* Forster. 703, 704. *D. mawhero*, new species.

realis but fused poreplates smaller, restricted to median surface of posterior sac; few smaller plates present on posterior surface.

OTHER MATERIAL EXAMINED: Other specimens taken under *Cyathodes smithii* at the type locality on March 30, 1974, by J. C. Watt (EDA).

DISTRIBUTION: Hunua Range, North Island.

Duripelta townsendi, new species
Figures 700, 722

Duripelta borealis (misidentification): Forster, 1956, p. 139 (in part).

TYPES: Male holotype and female paratype taken in moss at an elevation of 1900 ft on Dun Mountain, Nelson, South Island, New Zealand (July 12, 1966; J. I. Townsend), deposited in EDA.

ETYMOLOGY: The specific name is a patronym in honor of the collector of the types.

DIAGNOSIS: This species can be separated from *D. borealis* (with which it was originally confused) by the differently shaped embolar tip and distinct differences in the female genitalia.

MALE: Total length 1.92. Carapace 0.84 long, 0.64 wide. Abdomen 1.00 long, 0.64 wide. Somatic characters similar to those of *D. borealis*.

	I	II	III	IV	Palp
Femur	0.56	0.56	0.44	0.56	0.24
Patella	0.28	0.28	0.20	0.24	0.13
Tibia	0.44	0.41	0.32	0.44	0.13
Metatarsus	0.39	0.41	0.35	0.44	—
Tarsus	0.28	0.28	0.24	0.24	0.17
Total	1.95	1.94	1.55	1.92	0.67

Distal portion of embolus with distinct distal projection beyond opening of sperm duct (fig. 700); lateral ridge prominent in *D. borealis* here greatly reduced, margin evenly rounded.

FEMALE: Total length 2.00. Carapace 0.80 long, 0.69 wide. Abdomen 1.12 long, 0.76 wide. Somatic characters as in male except abdominal scutum restricted to epigastric plate, extending anteriorly to encircle petiole and projecting posteriorly at level of each tracheal spiracle.

	I	II	III	IV	Palp
Femur	0.52	0.52	0.44	0.56	0.24
Patella	0.28	0.28	0.21	0.28	0.13
Tibia	0.48	0.45	0.37	0.48	0.13
Metatarsus	0.41	0.40	0.33	0.44	—
Tarsus	0.24	0.24	0.24	0.28	0.24
Total	1.93	1.89	1.59	2.04	0.74

Genitalia (fig. 722): anterior receptaculum with duct curved distally, distal sac therefore directed to one side; posterior receptaculum with secretory pores restricted to two lateral plates extending down posterior half.

OTHER MATERIAL EXAMINED: NEW ZEALAND: *South Island:* Marlborough: Port Ligar, elevation 1000 ft, litter, Aug. 26, 1969 (F. A. Alack, EDA). Nelson: Coads Creek, Dun Mountain, litter, Jan. 18, 1964 (J. I. Townsend, EDA); Dun Mountain, elevation 2500 ft, Nov. 3, 1961 (G. Kuschel, EDA); Opouri Saddle, Tennyson Inlet, litter, Aug. 7, 1967 (F. Alack, EDA); Pelorus Valley, elevation 700 ft, moss, July 13, 1965 (J. I. Townsend, EDA); Third House, Dun Mountain, moss, July 12, 1966 (J. I. Townsend, EDA); Third House Track, Dun Mountain, litter, Sept. 14, 1971 (G. W. Ramsay, EDA); Wooded Peak, Dun Mountain Track, litter, Sept. 14, 1971 (G. W. Ramsay, EDA).

DISTRIBUTION: Northern Nelson and Marlborough, South Island.

Duripelta egmont, new species
Figures 701, 721

Duripelta borealis (misidentification): Forster, 1956, p. 139 (in part).

TYPES: Male holotype and female paratype taken from moss at an elevation of 2157 ft on Mount Egmont, Taranaki, North Island, New Zealand (February 24, 1967; C. L. Wilton), deposited in OMD.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species seems closely related to *D. townsendi* but can be separated by differences in the shape of the embolar tip and the structure of the female genitalia.

MALE: Total length 1.64. Carapace 0.80 long, 0.60 wide. Abdomen 0.84 long, 0.65 wide. Coloration and eyes as in *D. townsendi*; abdomen with dorsal scutum. Tarsal organ typical, with three short receptor lobes

grouped at base of long median spine. Claws typical.

	I	II	III	IV	Palp
Femur	0.47	0.47	0.41	0.52	0.20
Patella	0.19	0.19	0.17	0.20	0.12
Tibia	0.44	0.41	0.29	0.41	0.12
Metatarsus	0.32	0.32	0.32	0.41	—
Tarsus	0.20	0.20	0.20	0.24	0.20
Total	1.62	1.59	1.39	1.78	0.64

Embolus similar to that of *D. townsendi* but distal projection stouter, shorter (fig. 701).

FEMALE: Total length 2.00. Carapace 0.83 long, 0.56 wide. Abdomen 1.00 long, 0.72 wide. Somatic characters as in male except dorsal scutum on abdomen lacking.

	I	II	III	IV	Palp
Femur	0.60	0.60	0.49	0.61	0.24
Patella	0.24	0.24	0.20	0.32	0.16
Tibia	0.47	0.45	0.33	0.45	0.16
Metatarsus	0.36	0.36	0.33	0.45	—
Tarsus	0.20	0.20	0.20	0.24	0.24
Total	1.87	1.85	1.55	2.07	0.80

Genitalia (fig. 721) with anterior receptaculum similar to that of *D. townsendi* but anterior sac elongate; poreplates on posterior receptaculum fragmented (in contrast to fusion of plates on each side in *D. townsendi*).

OTHER MATERIAL EXAMINED: NEW ZEALAND: *North Island:* Taranaki: Dawson Falls, Mount Egmont, litter, Jan. 23, 1972 (G. W. Ramsay, EDA); Mount Egmont, litter, Apr. 17, 1965 (A. K. Walker, EDA), elevation 914 m, litter, Jan. 23, 1967 (G. W. Ramsay, EDA), elevation 3000 ft, litter, Mar. 21, 1969 (R. R. Forster, C. L. Wilton, OMD); Mount Messenger, litter, Mar. 3, 1969 (R. R. Forster, OMD).

DISTRIBUTION: Taranaki, North Island.

Duripelta mawhero, new species

Figures 678, 679, 684–688, 703–705, 715

Duripelta australis (misidentification): Forster, 1956, p. 144 (in part).

TYPES: Male holotype and female paratype from leaf litter taken at Mawhero State Forest, 8 km southeast of Ngaheru, Nelson, South Island, New Zealand (November 10, 1971; J. McBurney), deposited in EDA.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species seems closely related to *D. paringa* but can be separated by differences in the shape of the distal portion of the male embolus and in the detailed structure of the female genitalia.

MALE: Total length 2.36. Carapace 0.88 long, 0.65 wide. Abdomen 0.88 long, 0.60 wide. Abdominal patterning similar to that of *D. borealis*. Eyes as in *D. hunua*. Tarsal organ lacking marginal lobes, with typical long median receptor spine bearing small lobe at base, flanked by short secondary receptor spine (fig. 715). Claws as in figures 684, 685.

	I	II	III	IV	Palp
Femur	0.66	0.61	0.52	0.64	0.28
Patella	0.24	0.20	0.20	0.28	0.13
Tibia	0.53	0.48	0.28	0.48	0.13
Metatarsus	0.40	0.40	0.32	0.48	—
Tarsus	0.28	0.24	0.21	0.26	0.20
Total	2.11	1.93	1.53	2.14	0.74

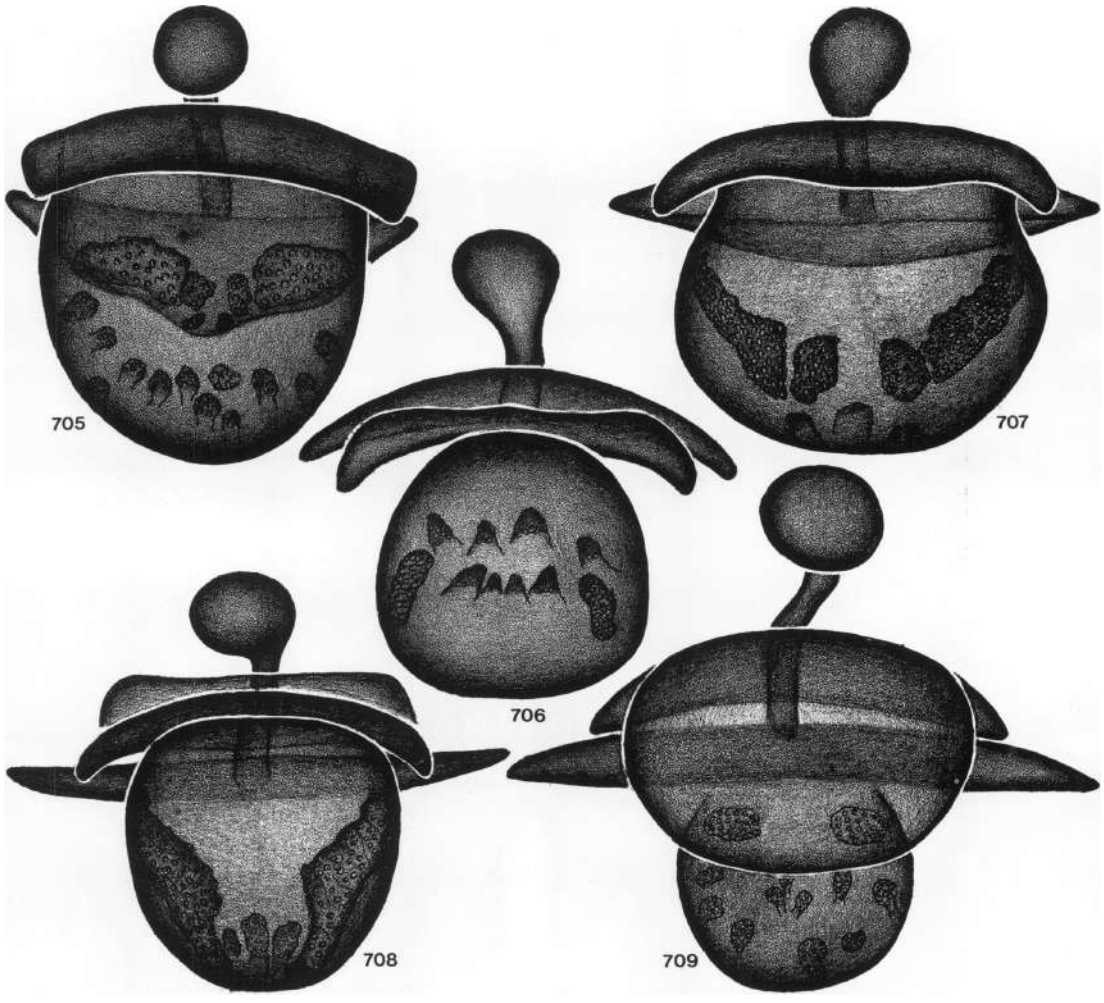
Tip of embolus as in figures 703, 704.

FEMALE: Total length 2.16. Carapace 0.96 long, 0.68 wide. Abdomen 1.16 long, 0.72 wide. Patterning as in male; ventral scutum confined to epigastric region with extensions on each side to tracheal spiracles and anteriorly to anterior face of abdomen. Eyes and tarsal organ as in male. Claws as in figures 686, 687.

	I	II	III	IV	Palp
Femur	0.68	0.64	0.44	0.68	0.28
Patella	0.28	0.24	0.24	0.28	0.12
Tibia	0.48	0.48	0.36	0.48	0.12
Metatarsus	0.44	0.43	0.40	0.52	—
Tarsus	0.28	0.28	0.24	0.28	0.22
Total	2.16	2.07	1.68	2.24	0.74

Genitalia (fig. 705) with pores from posterior secretory gland opening into receptaculum through pair of large irregular plates near midpoint and number of smaller plates posteriorly.

OTHER MATERIAL EXAMINED: NEW ZEALAND: *South Island:* Marlborough: head of Fabians Valley, elevation 3000 ft, litter, Oct. 23, 1963 (J. I. Townsend, EDA). Nelson: Capleston, pitfall trap, Nov. 8–10, 1972 (J. C. Watt, EDA), litter, Mar. 8, 1972 (J. C. Watt, EDA); Capleston Beetle Reserve, Redmans



FIGS. 705–709. Female genitalia of *Duripelta*. 705. *D. mawhero*, new species. 706. *D. paringa*, new species. 707. *D. hunua*, new species. 708. *D. borealis* Forster. 709. *D. australis* Forster.

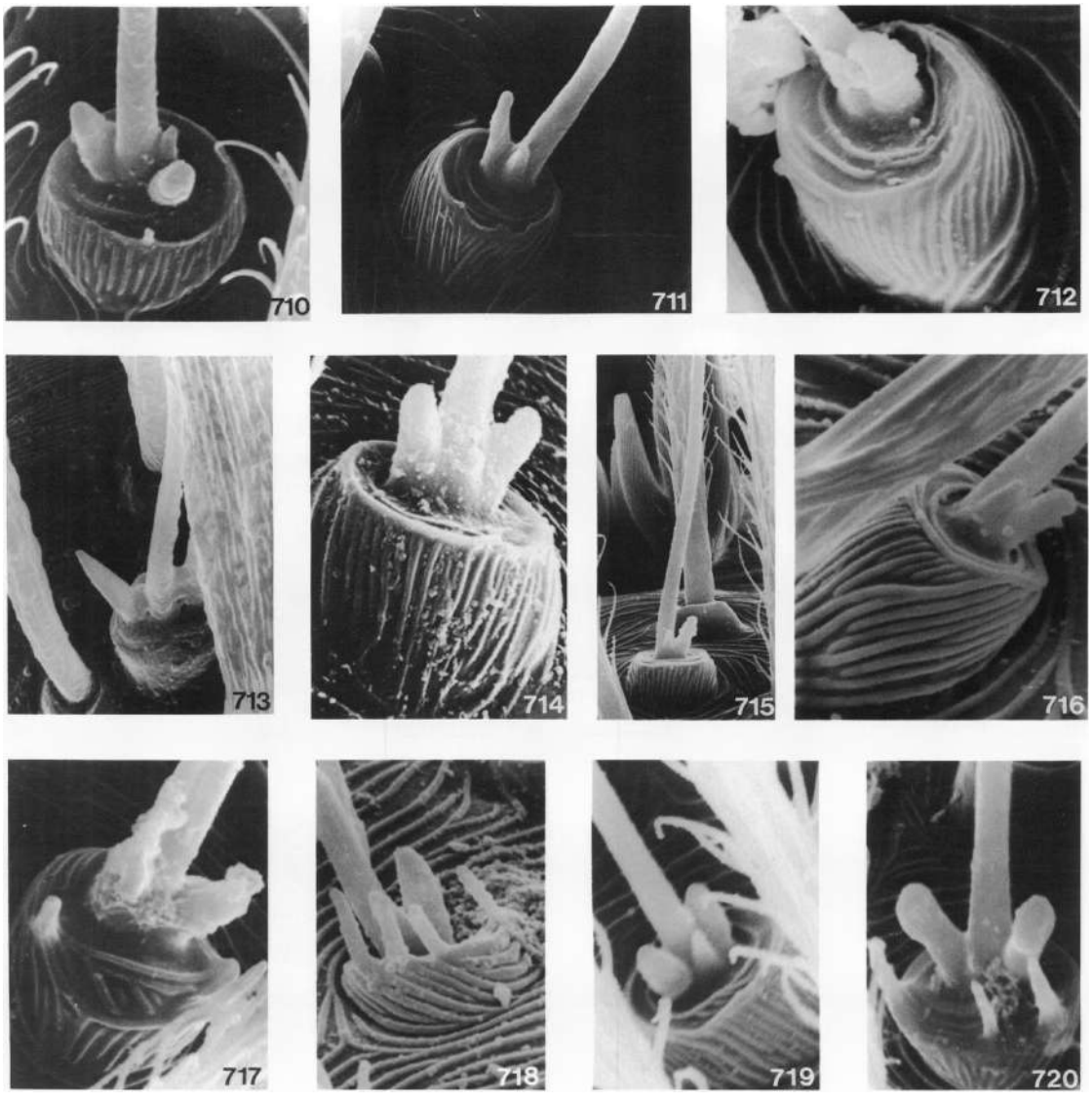
Creek, litter, Apr. 6, 1973 (J. C. Watt, EDA); Capleston Biological Reserve, moss, Jan. 12, 1973 (J. C. Watt, EDA); Capleston, Central Wall, 4.5 km SE Cronadum, litter (J. C. Watt, EDA); Fletchers Creek, litter, Sept. 10–Apr. 18, 1971–1973 (J. McBurney, J. S. Dugdale, EDA); Harwoods Track, Canaan, litter, Feb. 4, 1965 (L. P. Marchant, EDA); Inangahua, moss, Sept. 19, 1972 (J. S. Dugdale, EDA); Italians Creek, moss, Jan. 12, 1973 (J. C. Watt, EDA); Kahurangi, litter, Aug. 20, 1970 (F. Alack, EDA); Mawhero, litter, Mar. 8, 1972 (J. S. Dugdale, EDA); Mawhero State Forest, 8 km SE Ngahera, litter, Mar. 10, 1971 (J. McBurney, EDA); 6 km SW Rotohohu, Jan. 25, 1972 (J. S. Dugdale, EDA); Stoney Creek, Inangahua, moss, Sept. 19, 1972 (J. S. Dugdale, EDA); West Inangahua, litter, Apr. 8, 1972 (J. S. Dugdale, EDA).

DISTRIBUTION: Nelson and Marlborough, South Island.

Duripelta paringa, new species
Figures 683, 694, 698, 699, 706, 710

Duripelta australis (misidentification): Forster, 1956, p. 144 (in part).

TYPES: Male holotype and female paratype from litter in mixed forest at Lake Paringa, Westland, South Island, New Zealand (Feb-



FIGS. 710–720. Tarsal organ of *Duripelta*. 710. *D. paringa*, new species. 711. *D. australis* Forster. 712. *D. peha*, new species. 713. *D. alta*, new species. 714. *D. watti*, new species. 715. *D. mawhero*, new species. 716. *D. minuta* Forster. 717. *D. pallida* (Forster). 718. *D. monowai*, new species. 719. *D. borealis* Forster. 720. *D. scuta*, new species.

ruary 17, 1984; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species seems closely related to *D. mawhero* but the two can be separated by differences in the shape of the embolar tip and female genitalia.

MALE: Total length 1.68. Carapace 0.84 long, 0.69 wide. Abdomen 0.96 long, 0.60 wide. Abdominal patterning as in *D. borealis* but dorsal scutum lacking. Eyes as in *D. hunua*. Tarsal organ with short receptor lobe on each side of elongate median spine (fig. 710); small secondary lobe present at base of median spine. Claws typical.

	I	II	III	IV	Palp
Femur	0.60	0.60	0.57	0.60	0.28
Patella	0.28	0.26	0.25	0.25	0.20
Tibia	0.48	0.45	0.36	0.49	0.12
Metatarsus	0.41	0.40	0.40	0.49	—
Tarsus	0.28	0.24	0.21	0.24	0.20
Total	2.05	1.95	1.79	2.07	0.80

Shape of distal portion of embolus as in figures 698, 699.

FEMALE: Total length 2.12. Carapace 0.88 long, 0.64 wide. Abdomen 1.24 long, 0.80 wide. Somatic characters as in male except dorsal abdominal pattern as in figure 694.

	I	II	III	IV	Palp
Femur	0.69	0.64	0.48	0.64	0.28
Patella	0.28	0.28	0.24	0.28	0.16
Tibia	0.48	0.48	0.37	0.52	0.16
Metatarsus	0.45	0.45	0.41	0.52	—
Tarsus	0.28	0.26	0.22	0.28	0.24
Total	2.18	2.11	1.72	2.24	0.84

Genitalia (fig. 706) with distal sac of anterior receptaculum large; secretory poreplates associated with posterior receptaculum relatively small, with median plates tending to be lobulate.

OTHER MATERIAL EXAMINED: Much of the material recorded earlier (Forster, 1956) as *Duripelta australis* from numerous localities along the west coast of the South Island actually belongs to *D. paringa*. The true *D. australis* appears to have a restricted distribution, limited to higher altitudes along the Lewis Pass, whereas *D. paringa* extends along the lowland forest from Martins Bay in the south to near Greymouth in the north. Further north along the west coast of the South Island, this species is replaced by *D. mawhero* (which also occurs in the northern Nelson and Marlborough regions).

DISTRIBUTION: Westland, South Island.

Duripelta australis Forster
Figures 682, 689, 695, 702, 709, 711

Duripelta australis Forster, 1956, p. 144, figs. 92–101 (male holotype from Lewis Pass, South Island, New Zealand, in CMC, examined).

NOTE: The original description (based on the type specimens) is amplified here by illustrations of the embolar tip (fig. 702) and female genitalia (fig. 709). The latter are unusual because the posterior receptaculum is constricted to form a double sac; the anterior portion, which overhangs the muscle plates, lacks secretory pores (which are present on the posterior portion, in association with small plates). Although the original description was based on specimens with a typical full chevron pattern on the abdomen, the majority of specimens examined have this patterning greatly reduced (fig. 695), leaving only a few dark patches down the middorsal surface. The tarsal organ is typical; the mound has no marginal lobes and there are only two accessory receptor lobes associated with the median spine (fig. 711).

NEW RECORDS: NEW ZEALAND: *South Island:* Lewis Pass, elevation 2200 ft, Jan. 29, 1956 (R. R. Forster, OMD), litter, Mar. 23, 1965 (N. A. Walker, OMD); Riordans Bridge, Lewis Pass, moss, Sept. 21, 1970 (C. L. Wilton, OMD), moss, Apr. 25, 1977 (R. R. Forster, OMD, AMNH).

DISTRIBUTION: Lewis Pass, South Island.

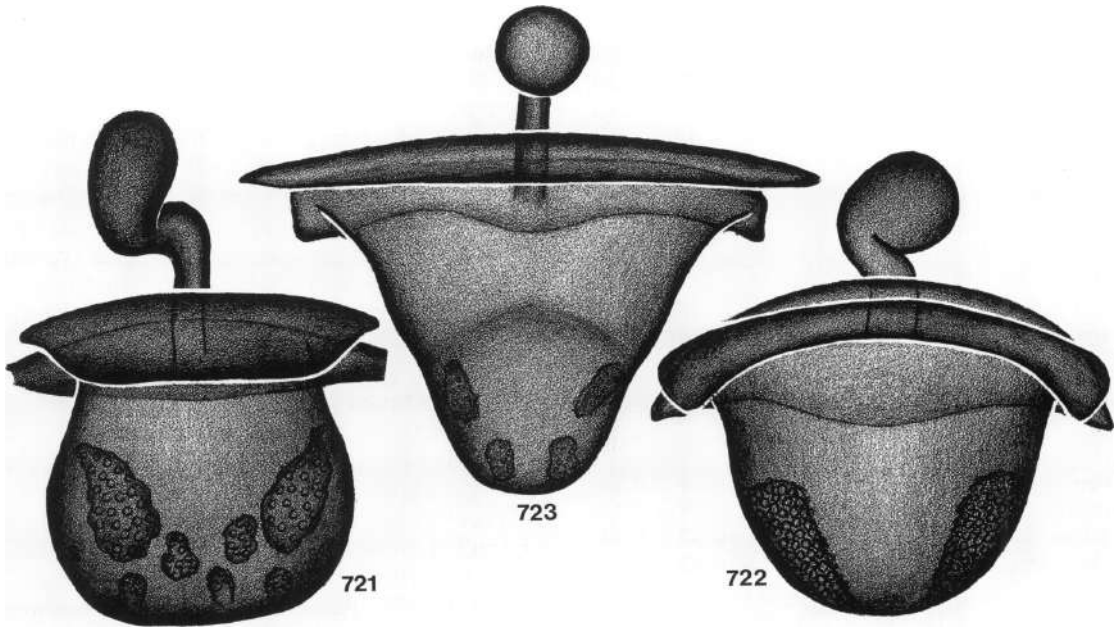
Duripelta peha, new species
Figures 693, 712, 723

TYPES: Female holotype taken from leaf litter in mixed forest at Peel Forest, Canterbury, South Island, New Zealand (May 10, 1983; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name is an arbitrary combination of letters.

DIAGNOSIS: The distinctive patterning of the abdomen and the form of the female genitalia immediately characterize this species.

FEMALE: Total length 1.92. Carapace 0.72 long, 0.56 wide. Abdomen 1.16 long, 0.68 wide. Carapace and appendages pale reddish brown, abdomen with reduced chevron pattern down middorsal surface and few irregular dark patches laterally (fig. 693); epigastric region lightly sclerotized. Eyes relatively large, uniform in size, diameters approximately one-eighth of head width. Basal mound of tarsal organ without marginal lobes, median receptor spine with two small receptor lobes at base (fig. 712).



FIGS. 721–723. Female genitalia of *Duripelta*. 721. *D. egmont*, new species. 722. *D. townsendi*, new species. 723. *D. peha*, new species.

	I	II	III	IV	Palp
Femur	0.48	0.44	0.40	0.51	0.21
Patella	0.20	0.20	0.16	0.22	0.12
Tibia	0.40	0.40	0.29	0.40	0.14
Metatarsus	0.33	0.33	0.26	0.43	—
Tarsus	0.25	0.25	0.21	0.25	0.20
Total	1.66	1.62	1.32	1.81	0.67

Anterior receptaculum typical, with spherical distal sac; posterior receptaculum distinctive, midway between unequivocally single and double structures characteristic of other species—posterior half of sac demarcated by shallow transverse groove, bearing four small irregular poreplates (fig. 723).

MALE: Unknown.

OTHER MATERIAL EXAMINED: A further female collected with the holotype (AMNH).

DISTRIBUTION: Canterbury, South Island.

Duripelta minuta Forster
Figures 716, 726, 736, 745

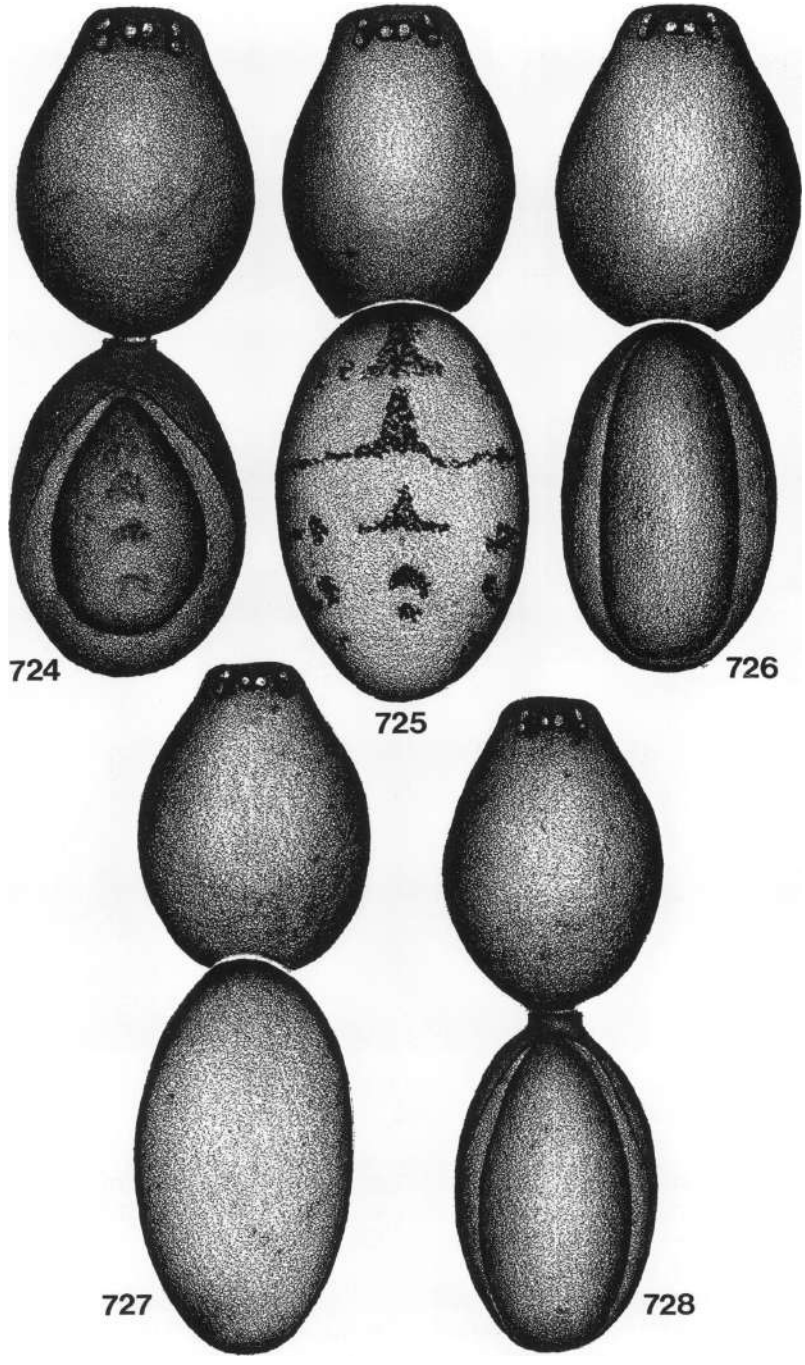
Duripelta minuta Forster, 1956, p. 147, figs. 102–109 (male holotype from Ashley Gorge, Canterbury, South Island, New Zealand, in CMC, examined).

NOTE: This small (total length male 1.4, female 1.6), pale, unpatterned species (fig. 726) is apparently restricted to mid-Canterbury; no further specimens have been collected since the original description. A more detailed examination of specimens collected earlier from areas near the type locality permits a few additional details to be added to the original description. The tarsal organ is similar to that of the larger, pigmented species; the basal mound lacks marginal lobes and the elongate receptor lobe has two small lobes at its base (fig. 716). The embolus is relatively slender, with a lateral expansion near the tip (where the sperm duct opens) and a slender curved spinous process extending beyond (fig. 736). The female genitalia are similar to those of *D. australis*, with the posterior receptaculum constricted to form a double sac. As in *D. australis*, the secretory gland opens into the posterior sac through a pair of small flat plates as well as a few lobulate structures (fig. 745).

DISTRIBUTION: Mid-Canterbury, South Island.

Duripelta otara, new species
Figure 737

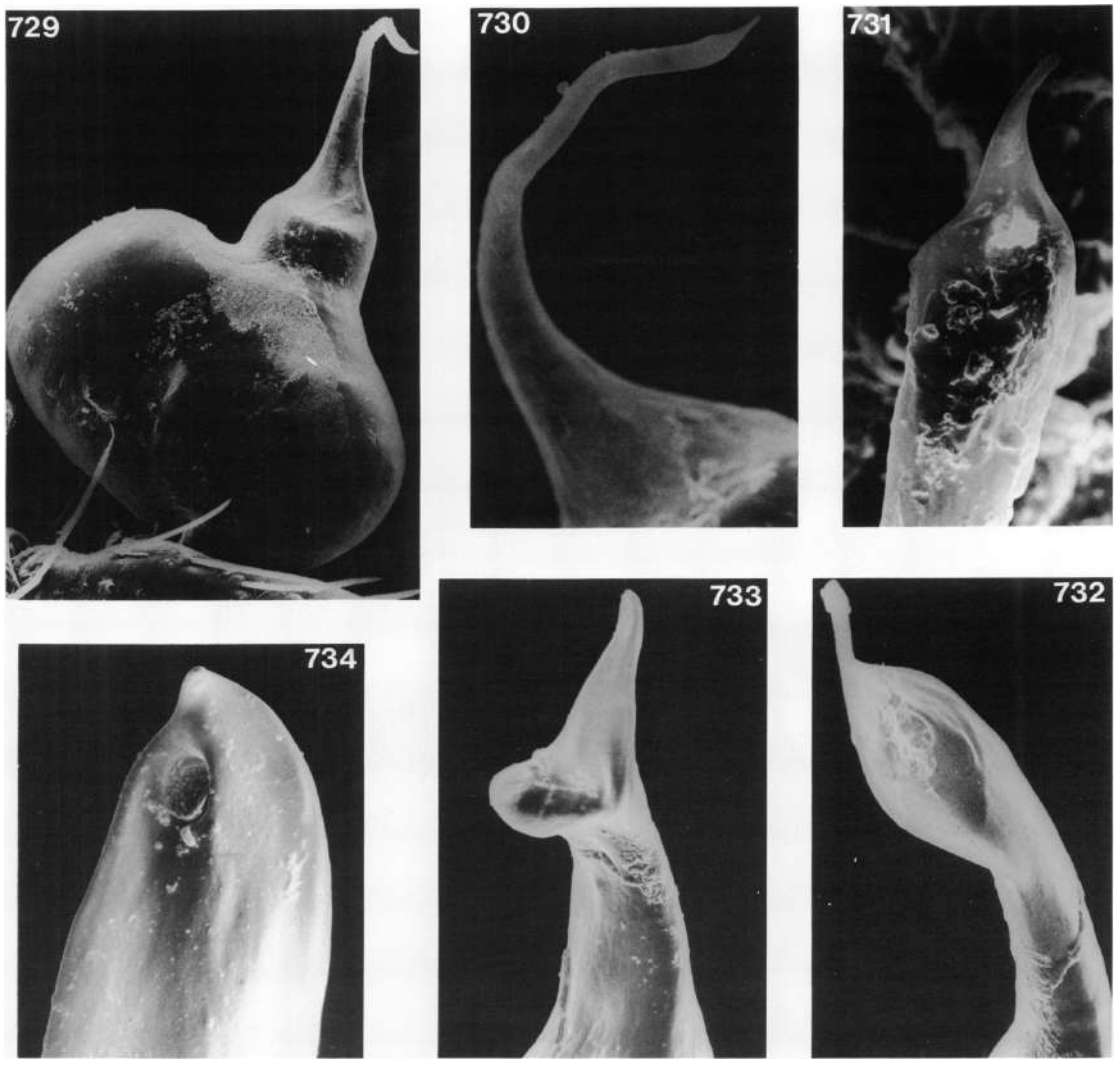
TYPE: Male holotype from litter in mixed forest at Trotters Gorge, Otago, South Island,



FIGS. 724–728. Dorsal view of body of *Duripelta*. 724, 725. *D. watti*, new species, male, female. 726. *D. minuta* Forster, male. 727, 728. *D. scuta*, new species, female, male.

New Zealand (February 6, 1979; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name is an arbitrary combination of letters.



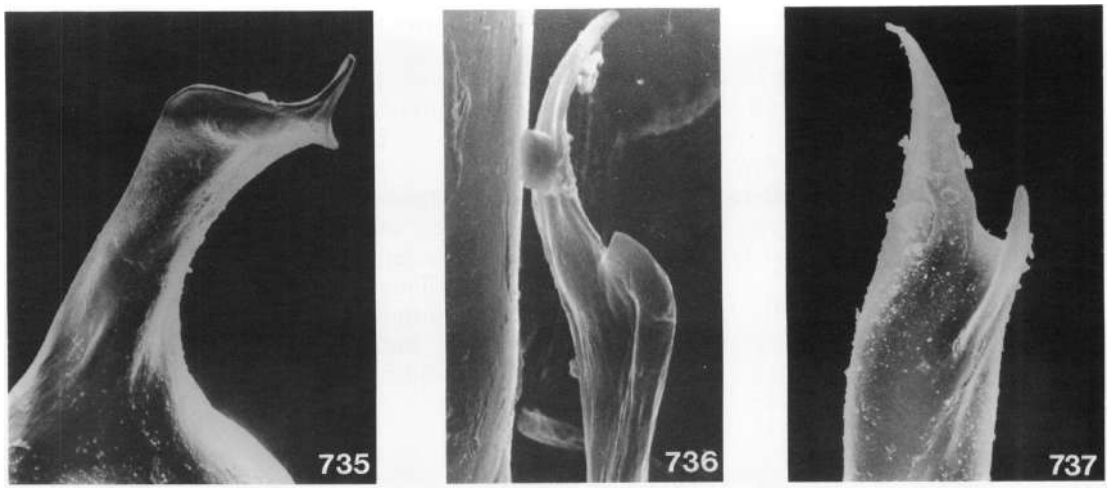
FIGS. 729–734. Male palp of *Duripelta*. 729, 730. *D. watti*, new species. 731, 732. *D. pallida* (Forster). 733. *D. scuta*, new species. 734. *D. alta*, new species.

DIAGNOSIS: This unpatterned species seems closely related to *D. minuta* but is larger and has a distinctly different-shaped embolar tip.

MALE: Total length 1.63. Carapace 0.84 long, 0.55 wide. Abdomen 0.68 long, 0.60 wide. Unpatterned; prosoma and appendages yellowish brown, abdominal scuta paler, ventral scutum extensive, extending back to spinnerets and anteriorly to encircle petiole, dorsal scutum abutting on extension of ventral scutum, extending back down abdomen to four-fifths its length. Eyes one-sixth head width in diameter. Tarsal organ without marginal lobes on basal mound; two small receptor lobes present at base of median spine. Claws typical.

	I	II	III	IV	Palp
Femur	0.56	0.56	0.43	0.56	0.20
Patella	0.20	0.16	0.16	0.20	0.12
Tibia	0.39	0.40	0.28	0.39	0.12
Metatarsus	0.36	0.36	0.28	0.39	—
Tarsus	0.24	0.24	0.21	0.22	0.16
Total	1.75	1.72	1.36	1.76	0.60

Tip of embolus as in figure 737, distal pro-



FIGS. 735–737. Embolus of *Duripelta*. 735. *D. monowai*, new species. 736. *D. minuta* Forster. 737. *D. otara*, new species.

jection stouter than in *D. minuta*, lateral ridge more prominent.

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Otago, South Island.

Duripelta pallida (Forster), new combination
Figures 680, 681, 717, 731, 732, 740

Ascuta pallida Forster, 1956, p. 132, figs. 72–75 (male holotype from Lake Te Au, near Lake Te Anau, Fiordland, South Island, New Zealand, in CMC, examined).

NOTE: This small (total length male 1.3, female 1.4), pale orsolobid was originally placed in *Ascuta* rather than *Duripelta* because it lacked abdominal scuta. The discovery of other species that are undoubtedly closely related but which have well developed scuta (e.g., *D. scuta*) suggests that the species belongs in this genus and has probably lost the scuta. There is, in fact, a slight thickening of the epigastric region in both sexes.

No further specimens from the type locality were available for study; it has been possible to provide scanning electron micrographs for the embolus tip and tarsal organ of the holotype male, but the female specimens were not suitable for genitalic examination. A series of specimens collected from Piano Flat, Waikaia Valley, Southland, South Island, appears to belong to this species and the genitalia of a female from this series are illustrated.

The tarsal organ has three marginal lobes (fig. 717); the median receptor spine is flanked on each side by a small, sharply pointed receptor lobe. The distal portion of the embolus is excavated to form a spoon-shaped opening for the sperm duct and narrows to form a slender apical extension (figs. 731, 732). The genitalia of the Piano Flat female (fig. 740) have the anterior receptaculum slender and the distal sac small; the secretory pores associated with the posterior receptaculum are located at the ends of a number of lobes.

DISTRIBUTION: Northern Fiordland and northwest Southland, South Island.

Duripelta monowai, new species
Figures 718, 735, 744

TYPES: Male holotype and female paratype from moss in a *Nothofagus* forest at Lake Monowai, Southland, South Island, New Zealand (March 13, 1981; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species can easily be separated from all other unpatterned species by the structure of the female genitalia and the shape of the distal portion of the male embolus.

MALE: Total length 1.32. Carapace 0.64

long, 0.40 wide. Abdomen 0.72 long, 0.44 wide. Prosoma and appendages pale yellow, abdomen creamy white; slight sclerotization of epigastric region present but otherwise scuta lacking. Eyes uniform in size, extremely small, with diameters one-fifteenth of head width. Basal mound of tarsal organ low, with four marginal lobes (fig. 718); receptor spine with single basal lobe. Claws typical.

	I	II	III	IV	Palp
Femur	0.39	0.33	0.28	0.41	0.20
Patella	0.16	0.16	0.12	0.19	0.09
Tibia	0.31	0.28	0.24	0.32	0.09
Metatarsus	0.29	0.25	0.24	0.32	—
Tarsus	0.16	0.16	0.16	0.20	0.12
Total	1.31	1.18	1.04	1.44	0.50

Anterior portion of embolus excavated, forked distally (fig. 735).

FEMALE: Total length 1.60. Carapace 0.72 long, 0.44 wide. Abdomen 0.94 long, 0.47 wide. Somatic characters as in male.

	I	II	III	IV	Palp
Femur	—	0.41	0.37	0.44	0.22
Patella	—	0.20	0.17	0.20	0.09
Tibia	—	0.32	0.32	0.36	0.09
Metatarsus	—	0.29	0.28	0.39	—
Tarsus	—	0.16	0.16	0.20	0.12
Total	—	1.38	1.30	1.59	0.52

Genitalia distinctive (fig. 744), anterior receptaculum with only slight distal swelling, duct curved; posterior receptaculum almost twice as long as wide, with posterior portion wider than anterior half; four small, irregularly shaped poreplates present across posterior portion of sac.

OTHER MATERIAL EXAMINED: Further specimens collected with the types (OMD, AMNH).

DISTRIBUTION: Southland, South Island.

Duripelta totara, new species
Figure 743

TYPE: Female holotype from litter in mixed forest at Totara Reserve, Pohangina Valley, Manawatu, North Island, New Zealand (May 25, 1979; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: On female genitalic characters, this species seems most closely related to *D. alta*, from which it can be separated by differences in the poreplates of the posterior receptaculum.

FEMALE: Total length 1.72. Carapace 0.68 long, 0.52 wide. Abdomen 1.00 long, 0.52 wide. Prosoma and appendages pale yellow, abdomen creamy white; epigastric region weakly sclerotized. Eyes uniform, relatively small, diameters one-tenth of head width. Basal mound of tarsal organ without marginal lobes, median spine flanked on each side with small receptor lobe. Claws typical.

	I	II	III	IV	Palp
Femur	0.40	0.40	0.36	0.44	0.16
Patella	0.21	0.20	0.17	0.24	0.09
Tibia	0.37	0.36	0.28	0.40	0.09
Metatarsus	0.29	0.31	0.28	0.36	—
Tarsus	0.16	0.16	0.16	0.16	0.12
Total	1.43	1.43	1.25	1.60	0.46

Genitalia (fig. 743) with distal expansion of anterior receptaculum large; posterior receptaculum constricted near midpoint, with two transverse poreplates extending across dorsal surface of posterior half.

MALE: Unknown.

OTHER MATERIAL EXAMINED: Although only a single specimen was available for examination, we have described the species because it provides the sole record for the presence of a minute, unpatterned species in the North Island and the genitalic characters clearly separate it from all other species. We have examined a few fragmentary specimens sorted from pitfall collections in the Orongorongo district, near Wellington, which appear to be *Duripelta* and could belong to this species.

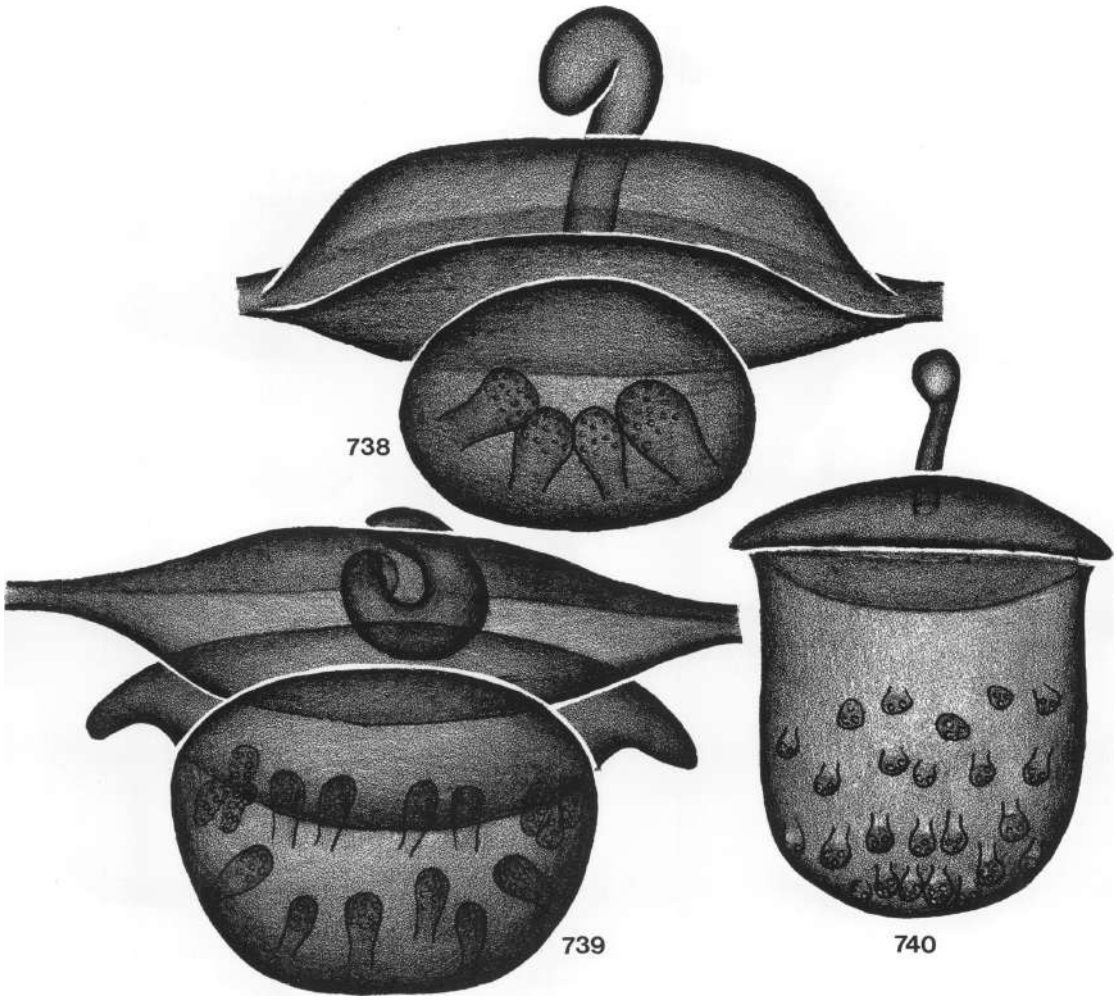
DISTRIBUTION: Manawatu, North Island.

Duripelta alta, new species
Figures 713, 734, 741

TYPES: Male holotype and female paratype from litter in deep moss cushions at an elevation of 1402 m in the Carrick Range, Fiordland, South Island, New Zealand (March 14, 1975; J. C. Watt), deposited in EDA.

ETYMOLOGY: The specific name refers to the mountain habitat in which the type specimens were collected.

DIAGNOSIS: This species can be separated



FIGS. 738–740. Female genitalia of *Duripelta*. 738. *D. koomaa*, new species. 739. *D. scuta*, new species. 740. *D. pallida* (Forster).

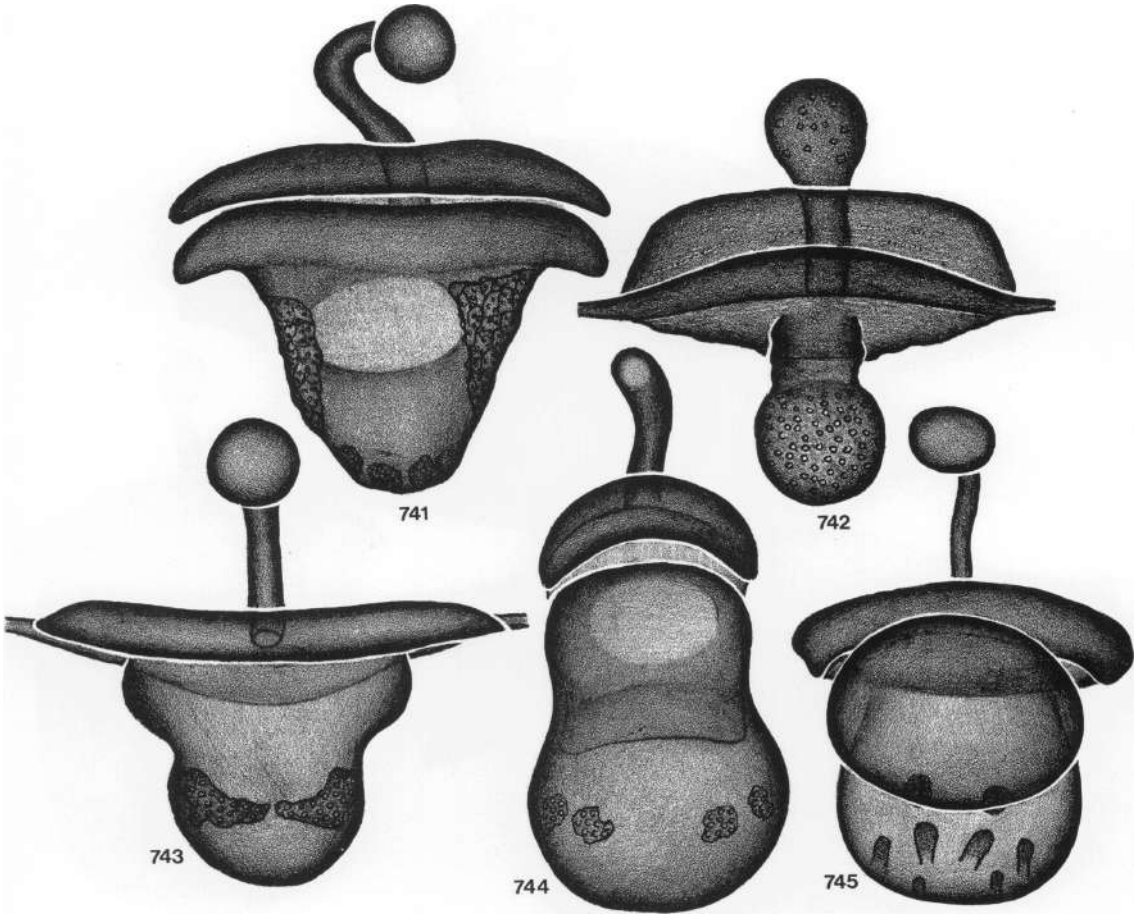
from all other known unpatterned species by the form of the female genitalia and the shape of the distal portion of the male embolus.

MALE: Total length 1.80. Carapace 0.72 long, 0.52 wide. Abdomen 1.04 long, 0.53 wide. Unpatterned, prosoma and appendages pale yellowish brown, abdomen creamy white, not sclerotized (even in epigastrium) and thus differing from all other species; carapace and sternum finely granulate. Eyes as in *D. otara*. Spines present on tibiae III (v0-0-2) and IV (p0-0-1, v0-0-2, r0-0-1) and on metatarsi III and IV (p0-0-2, v0-0-2, r0-0-2). Basal mound of tarsal organ without marginal lobes, median receptor spine flanked on each side by short, pointed receptor lobe (fig. 713). Claws typical.

	I	II	III	IV	Palp
Femur	0.56	0.49	0.45	0.58	0.21
Patella	0.25	0.21	0.17	0.24	0.11
Tibia	0.44	0.41	0.29	0.42	0.11
Metatarsus	0.44	0.35	0.32	0.45	—
Tarsus	0.24	0.24	0.21	0.24	0.16
Total	1.93	1.70	1.44	1.93	0.59

Embolus tip broad, not excavated, with small round opening of sperm duct subdistal, behind short apical point (fig. 734).

FEMALE: Total length 1.80. Carapace 0.72



FIGS. 741–745. Female genitalia of *Duripelta*. 741. *D. alta*, new species. 742. *D. watti*, new species. 743. *D. totara*, new species. 744. *D. monowai*, new species. 745. *D. minuta* Forster.

long, 0.61 wide. Abdomen 1.08 long, 0.60 wide. Somatic characters as in male.

	I	II	III	IV	Palp
Femur	0.56	0.48	0.44	0.56	0.24
Patella	0.19	0.20	0.20	0.20	0.12
Tibia	0.44	0.39	0.24	0.44	0.12
Metatarsus	0.36	0.36	0.25	0.47	—
Tarsus	0.24	0.24	0.21	0.24	0.21
Total	1.79	1.67	1.34	1.91	0.69

Genitalia (fig. 741) similar to those of chevroned species, duct of anterior receptaculum sinuous, distal sac large; posterior receptaculum with large, lateral poreplates and four smaller plates along posterior margin.

OTHER MATERIAL EXAMINED: Further specimens collected with the types (EDA).

DISTRIBUTION: Fiordland, South Island.

DISCUSSION: The female genitalia and embolus shape do not differ greatly from those of the larger scutate chevroned species (e.g., *D. australis*) despite the complete absence of sclerotization on the abdomen. It is difficult to relate this species closely to any of the unpigmented species other than the North Island *D. totara* (of which, however, no males are known).

Duripelta scuta, new species
Figures 720, 727, 728, 733, 739

TYPES: Male holotype and female paratype from litter and moss taken at Stoney Creek, West Inangahua State Forest, Nelson, South

Island, New Zealand (September 19, 1972; J. S. Dugdale), deposited in EDA.

ETYMOLOGY: The specific name refers to the presence of a dorsal scutum in the male.

DIAGNOSIS: This species seems closely related to *D. pallida* and *D. koomaa* but can be separated by the structure of the female genitalia and the embolus of the male palp, and by the presence of a dorsal scutum on the male abdomen.

MALE: Total length 1.40. Carapace 0.64 long, 0.43 wide. Abdomen 0.72 long, 0.41 wide. Prosoma, appendages, and abdominal scuta pale yellowish brown; soft portions of abdomen uniform creamy white; abdomen with extensive ventral scutum extending back to spinnerets and anteriorly to encircle petiole; oval dorsal scutum abuts on extension of ventral scutum anteriorly, extending back to immediately above spinnerets (fig. 728). Eyes uniform in size, diameters one-tenth of head width. Tarsal organ with three lobes on margin of basal mound and two small distally obtuse receptor lobes flanking median receptor spine (fig. 720). Claws typical.

	I	II	III	IV	Palp
Femur	0.40	0.40	0.33	0.40	0.16
Patella	0.16	0.16	0.16	0.16	0.08
Tibia	0.28	0.28	0.19	0.32	0.08
Metatarsus	0.28	0.28	0.20	0.28	—
Tarsus	0.20	0.20	0.16	0.19	0.12
Total	1.32	1.32	1.04	1.35	0.44

Tip of embolus as in figure 733.

FEMALE: Total length 1.52. Carapace 0.60 long, 0.52 wide. Abdomen 0.88 long, 0.56 wide. Abdomen creamy white (fig. 727), with only weak sclerotization over epigastric region. Other somatic characters as in male.

	I	II	III	IV	Palp
Femur	0.48	0.48	0.32	0.48	0.16
Patella	0.19	0.18	0.18	0.20	0.08
Tibia	0.32	0.32	0.25	0.40	0.08
Metatarsus	0.36	0.28	0.25	0.40	—
Tarsus	0.20	0.20	0.18	0.20	0.12
Total	1.55	1.46	1.18	1.68	0.44

Genitalia (fig. 739) with anterior receptaculum curved, tubular, not expanded distally; posterior receptaculum with group of small, irregular poreplates on each margin and 10 or 11 lobulate poreplates over dorsal surface.

OTHER MATERIAL EXAMINED: NEW ZEALAND: *South Island:* Marlborough: Durville Island, Kapowai, litter, Apr. 1971 (F. Alack, EDA); Shakespeare Bay, Picton, litter, Aug. 11, 1969 (J. McBurney, EDA); Ship Cove, litter, Nov. 30, 1972 (J. S. Dugdale, EDA); Waimarina Valley, litter, Dec. 12, 1966 (A. K. Walker, EDA); Nelson: Braeburn Track, Buller, moss, Mar. 9, 1965 (G. Kuschel, EDA); Karamea Saddle, elevation 1870 ft, litter, Oct. 13, 1970 (J. I. Townsend, EDA); Mount Domett, elevation 1000 m, litter (G. W. Ramsay, EDA); Onekaka Ridge, above iron ore pit, litter, May 20, 1967 (F. Alack, EDA); Palmers Bush, Eves Valley, Waimea, litter, Oct. 20, 1971 (G. W. Ramsay, EDA); Pelorus Valley, litter, Apr. 29, 1964 (J. I. Townsend, EDA); Tophouse, elevation 2100 ft, moss, July 27, 1965 (A. K. Walker, EDA).

DISTRIBUTION: Nelson and Marlborough, South Island.

Duripelta koomaa, new species

Figure 738, 825

TYPES: Male holotype and female paratype from moss on forest floor at Altonburn, Tuatapere, Southland, South Island, New Zealand (March 13, 1981; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name is from the Maori word meaning pale.

DIAGNOSIS: This species seems closely related to *D. pallida* and *D. scuta* but can be separated from them by the much longer and more slender male embolus and the fewer, but larger, secretory lobes associated with the posterior receptaculum of the female genitalia; it can be further separated from *D. scuta* by the lack of abdominal scuta.

MALE: Total length 1.23. Carapace 0.52 long, 0.40 wide. Abdomen 0.68 long, 0.43 wide. Prosoma and appendages pale yellowish brown, abdomen creamy white, weakly sclerotized in epigastric region but without true scuta. Eyes uniform in width, each only one-eleventh of head width. Tarsal organ with low basal mound and only one marginal lobe; single, small receptor lobe adjacent to median receptor spine, which has further small lobe at base. Claws typical.

	I	II	III	IV	Palp
Femur	0.36	0.33	0.28	0.36	0.20
Patella	0.16	0.16	0.12	0.16	0.09
Tibia	0.28	0.24	0.20	0.28	0.09
Metatarsus	0.28	0.24	0.20	0.31	—
Tarsus	0.15	0.16	0.16	0.20	0.12
Total	1.23	1.13	0.96	1.31	0.50

Embolus long, slender, sharply pointed distally (fig. 825).

FEMALE: Total length 1.56. Carapace 0.64 long, 0.45 wide. Abdomen 1.00 long, 0.60 wide. Somatic characters as in male except epigastric region apparently not sclerotized.

	I	II	III	IV	Palp
Femur	0.40	0.37	0.32	0.44	0.17
Patella	0.16	0.16	0.13	0.20	0.08
Tibia	0.32	0.32	0.21	0.32	0.08
Metatarsus	0.32	0.29	0.24	0.32	—
Tarsus	0.16	0.16	0.13	0.16	0.17
Total	1.36	1.30	1.03	1.44	0.50

Genitalia (fig. 738) similar to those of *D. scuta* but with only four large secretory lobes and no secretory plates associated with posterior receptaculum.

OTHER MATERIAL EXAMINED: Two females taken with the types and a further female taken at the type locality on November 25, 1970, by R. R. Forster (OMD, AMNH).

DISTRIBUTION: Southern Southland, South Island.

Duripelta watti, new species

Figures 714, 724, 725, 729, 730, 742

TYPES: Male holotype and female paratype taken from litter at Orongorongo Field Station, Wellington, North Island, New Zealand (September 17, 1969; J. C. Watt), deposited in EDA.

ETYMOLOGY: The specific name is a patronym in honor of the collector of the types.

DIAGNOSIS: This species can easily be separated from all others by the long, slender embolus of the male palp and the unusual posterior receptaculum of the female genitalia, which is small and lacks poreplates and secretory lobes.

MALE: Total length 1.74. Carapace 0.80 long, 0.64 wide. Abdomen 1.00 long, 0.62 wide. Prosoma, appendages, and abdominal scuta dark brown; few indistinct patches down midsurface of dorsal scutum but otherwise no indication of chevron pattern; ventral scutum extending back almost to spinnerets and forward to encircle petiole and cover anterior dorsal surface; distinct dorsal scutum narrow in front, where abutting on extension of ventral scutum, extending back down three-fourths of dorsal surface, broadly terminated (fig. 724). Eyes of equal size, diameters one-seventh of head width. Tarsal organ without marginal lobes on basal mound; median receptor spine flanked on each side with short receptor lobe, further small lobe at base of median spine (fig. 714). Claws typical.

	I	II	III	IV	Palp
Femur	0.64	0.60	0.47	0.68	0.24
Patella	0.28	0.28	0.28	0.28	0.16
Tibia	0.52	0.52	0.37	0.49	0.16
Metatarsus	0.44	0.44	0.36	0.56	—
Tarsus	0.28	0.25	0.24	0.28	0.18
Total	2.16	2.09	1.72	2.29	0.74

Male bulb (fig. 729) with embolus long, slender, terminating sharply (fig. 730).

FEMALE: Total length 2.20. Carapace 0.88 long, 0.63 wide. Abdomen 1.33 long, 0.88 wide. Prosoma and appendages brown, abdomen pale, with vestiges of chevron pattern on dorsum (fig. 725). Other somatic characters as in male.

	I	II	III	IV	Palp
Femur	0.68	0.65	0.49	0.72	0.20
Patella	0.24	0.24	0.24	0.27	0.16
Tibia	0.53	0.52	0.37	0.53	0.16
Metatarsus	0.44	0.44	0.37	0.56	—
Tarsus	0.28	0.28	0.25	0.28	0.21
Total	2.17	2.13	1.72	2.36	0.73

Genitalia very distinct, anterior receptaculum typical, with spherical blind sac at end of straight duct, but both duct and sac relatively large, pores on sac large, distinct; posterior receptaculum small, with posterior sac only slightly larger than distal expansion of anterior receptaculum; in addition (unlike all other species in genus), pores not grouped on poreplates but evenly spread over whole surface (fig. 742).

OTHER MATERIAL EXAMINED: Further specimens collected with the types (EDA).

DISTRIBUTION: Wellington, North Island.

DISCUSSION: While the general facies of this

species, including the structures of the claws and sense organs, suggests a close relationship with the large, chevroned species of *Duripelta*, the female genitalia (and particularly the posterior receptaculum) show surprising differences. In the absence of agreement in other characters, these differences would have suggested that the species belongs to a separate genus. It is probable that as the North Island fauna becomes better known, further species will come to light, which will help to resolve the question.

POUNAMUELLA, NEW NAME

Pounamua Forster, 1956, p. 151 (type species by original designation *Pounamua vulgaris* Forster); preoccupied by *Pounamua* Oliver, 1949 (Aves).

DIAGNOSIS: This genus can be separated from all others by the form of the female genitalia and the elongate median tooth on the outer margin of the claws of legs III and IV.

DESCRIPTION: Small orsolobids (total length 1.4–2.0) with uniform purplish abdominal pigmentation broken up on dorsum by thin, transverse (and sometimes longitudinal) pale lines, without scuta; carapace smooth, patterned. Eyes typical. Chelicerae with two teeth on each margin (fig. 752). Sternum smooth (fig. 754). Colulus typical. Female genitalia distinctive (figs. 764–771), with anterior receptaculum reduced to short lobe, in KOH-treated mounts characteristically retaining numerous threadlike aggregate ducts leading from secretory pores. Legs without spines (except in *P. hauroko* and *P. kuscheli*). Claws of legs III and IV with median tooth on lateral flange greatly elongated (figs. 746, 747); hairs bearing many microsetae present below claws (figs. 750, 751). Tarsal organ without marginal lobes on basal mound (except in *P. insula*), with long sensory spine flanked by two or three smaller receptor lobes (figs. 748, 749); bothrium smooth (fig. 753); proprioreceptor bristles distally branched. Male bulb usually simple but *P. complexa* and *P. kuscheli* have embolic region modified. Spiracles typical.

DISTRIBUTION: North and South Islands and the Auckland Islands.

DISCUSSION: Five species were described when the genus was first established (Forster, 1956); subsequently (Forster, 1964) two further species were added, one from the Auckland Islands and the other from Campbell Island. Of these seven species, three have been transferred above to other genera. The original descriptions of the four remaining species are adequate but the female genitalia are recorded here for the first time and scanning electron micrographs of the tarsal organ and male bulb are provided to allow direct comparison with the three new species described below.

Pounamuella vulgaris (Forster)

Figures 761, 762, 768, 781, 863

Pounamua vulgaris Forster, 1956, p. 151, figs. 110–119 (male holotype from Lake Te Au, near Lake Te Anau, Fiordland, South Island, New Zealand, in NMW, examined).

NOTE: No further specimens have been collected but the type series has been restudied. The original figures are accurate but the detailed structure of the male palp (figs. 761, 762) and tarsal organ (fig. 781) are illustrated here. The female genitalia are shown in figure 768.

DISTRIBUTION: Fiordland, South Island.

Pounamuella ramsayi (Forster), new rank

Figures 746–754, 758–760, 766

Pounamua vulgaris ramsayi Forster, 1956, p. 154, figs. 120–123 (male holotype from Lake Hankerson, Fiordland, South Island, New Zealand, in CMC, examined).

NOTE: These distinctive spiders, previously known from only the male holotype, warrant full specific status. The species has now been collected from other localities in the Fiordland region and further north from Haast Pass and appears to be more widely distributed than *P. vulgaris*.

MALE: See Forster (1956); the palp (figs. 758, 759) is readily separated from that of *P. vulgaris* by the broader bulb and more slender, relatively longer embolus.

FEMALE: Total length 2.11. Carapace 0.94 long, 0.71 wide. Abdomen 1.17 long, 0.83 wide. Somatic characters as in male; tarsal organ as in figure 760.

	I	II	III	IV	Palp
Femur	0.75	0.75	0.59	0.78	0.24
Patella	0.24	0.24	0.24	0.28	0.17
Tibia	0.55	0.55	0.43	0.63	0.16
Metatarsus	0.51	0.47	0.43	0.63	—
Tarsus	0.24	0.24	0.24	0.28	0.26
Total	2.29	2.25	1.93	2.60	0.83

Genitalia (fig. 766) typical for genus but clearly distinguishable from those of *P. vulgaris*.

NEW RECORDS: NEW ZEALAND: *South Island:* Fiordland: Cascade Creek, moss, Oct. 6–Feb. 14, 1975–1980 (R. R. Forster, OMD, AMNH); Haast Pass, moss, Feb. 15, 1984 (R. R. Forster, OMD); Wolffe Flat, Turret Range, elevation 680 m, moss and litter, Jan. 22, 1970 (G. W. Ramsay, EDA).

DISTRIBUTION: Fiordland, South Island.

Pounamuella hollowayae (Forster)
Figure 770

Pounamua hollowayi Forster, 1956, p. 160, figs. 145, 146 (male holotype from below Field Hut, Tararua Range, Wellington, North Island, New Zealand, in NMW, examined); *lapsus* in gender of specific name.

NOTE: No further material belonging to this species has been collected. The type specimens were restudied and the female genitalia of the allotype are illustrated (fig. 770). The male palp is readily separated from those of all other species; the bulb is pyriform and the embolus slender and sharply pointed.

DISTRIBUTION: Wellington, North Island.

Pounamuella australis (Forster)
Figures 6, 755–757, 767, 780

Pounamua australis Forster, 1964, p. 69, fig. 30 (female holotype from Natural Arch, Auckland Island, in NMW, examined).

NOTE: In the same paper in which this species was described from Auckland Island, a second species (*Pounamua gressitti* Forster) was recorded from Campbell Island. Although only a single adult female of *P. australis* was available at that time, the two superficially similar species could be readily separated by the smaller size of *P. australis* and the presence of a long receptor spine on the tarsal organ. Further specimens of *P. australis* are now available for study, including a male which is described below.

FEMALE: Described by Forster (1956). After examination of the genitalia (fig. 767), it is evident that the two subantarctic species are not closely related; "*Pounamua*" *gressitti* is here placed in *Waipoua* but the generic placement of *P. australis* is confirmed.

MALE: Total length 2.00. Carapace 0.91 long, 0.64 wide. Abdomen 1.05 long, 0.60 wide. Somatic characters as in female; tarsal organ typical for genus (fig. 757), basal mound without marginal lobes, apparently only one accessory receptor lobe associated with typical elongate receptor spine; claws of posterior legs as in figure 780.

	I	II	III	IV	Palp
Femur	0.63	0.63	0.61	0.71	0.24
Patella	0.32	0.29	0.24	0.32	0.24
Tibia	0.64	0.57	0.44	0.68	0.17
Metatarsus	0.61	0.49	0.40	0.65	—
Tarsus	0.28	0.28	0.25	0.31	0.26
Total	2.48	2.26	1.94	2.67	0.91

Palpal bulb ovoid, distal portion stout, upper surface excavated, sperm duct opening small, situated near tip (figs. 755, 756).

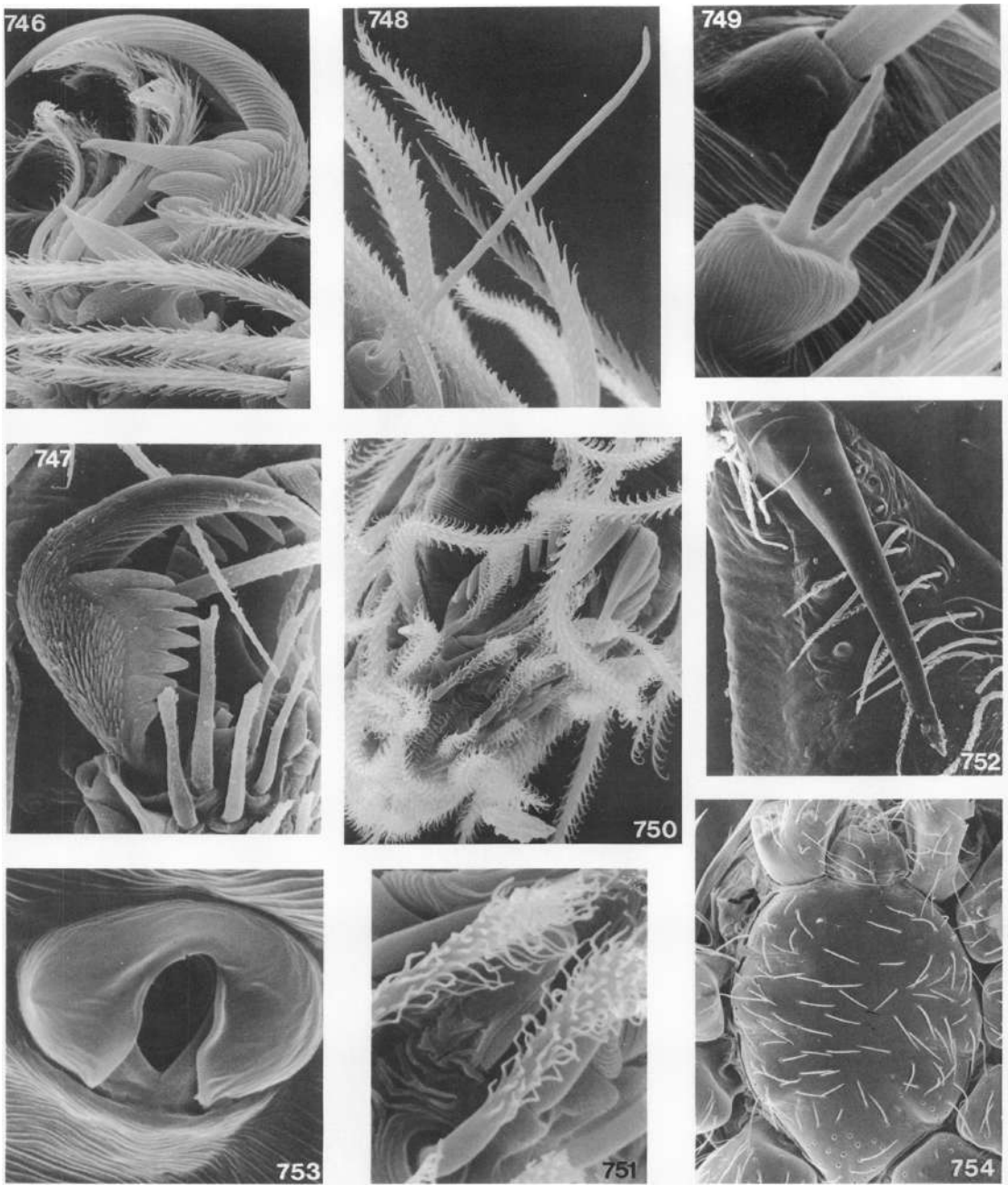
NEW RECORDS: AUCKLAND ISLANDS: *Adams Island:* Fairchild's Garden, litter, Feb. 10, 1973 (J. S. Dugdale, EDA). *Auckland Island:* Camp Cove, Carnley Harbour, litter, Feb. 19, 1973 (J. S. Dugdale, EDA); Lookout, Ranui Cove, elevation 54 m, moss, Feb. 27, 1973 (J. S. Dugdale, EDA); Mount D'Urville, elevation 639 m, moss and mats, Feb. 4, 1973 (J. Farrell, EDA); Ranui Cove, elevation 304 m, moss and ferns, Feb. 27, 1973 (J. S. Dugdale, EDA).

DISTRIBUTION: Known only from the Auckland Islands.

Pounamuella complexa (Forster)
Figures 764, 775–778

Pounamua complexa Forster, 1956, p. 163, figs. 133–139 (male holotype from Cascade Creek, Eglinton Valley, Fiordland, South Island, New Zealand, in CMC, examined).

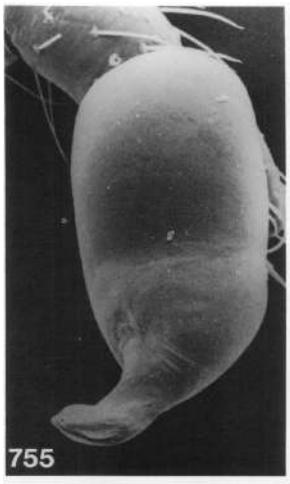
NOTE: This species is easily recognized by the striking modifications of the embolic region of the male palp, but otherwise the structure conforms closely with the other species in the genus that possess a simple, spiniform embolus. The tarsal organ, which was origi-

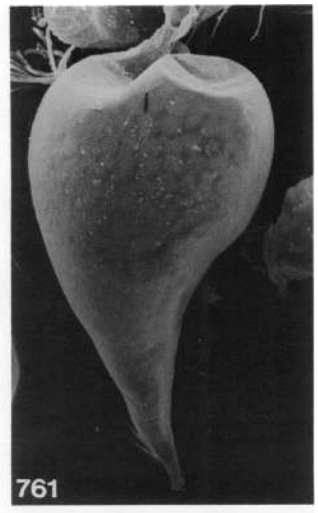


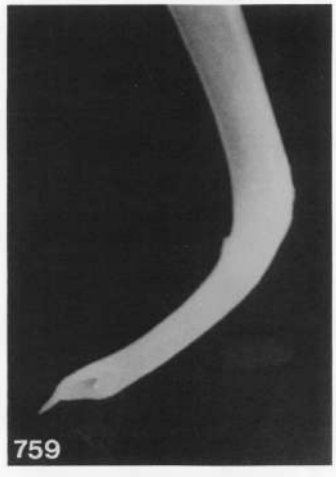
FIGS. 746–754. *Pounamuella ramsayi* (Forster). 746. Claw, leg III, female. 747. Claw, leg I, female. 748, 749. Tarsal organ. 750. Ventral surface of onychium, leg I, female. 751. Enlargement of scopulate hairs. 752. Chelicera, male, showing dentition. 753. Bothrium. 754. Ventral view of prosoma.

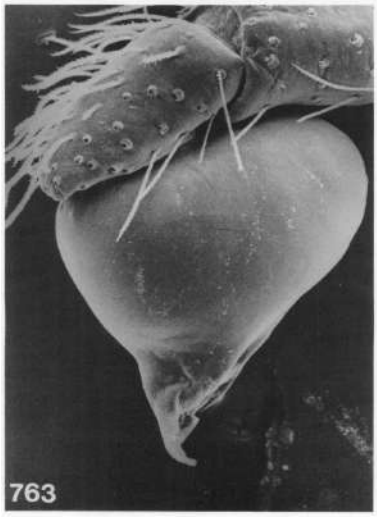
nally illustrated from a slide preparation, is shown in more detail in figure 778. The female internal genitalia are also typical for the genus (fig. 764). The form of the male bulb is shown in figures 775–777.

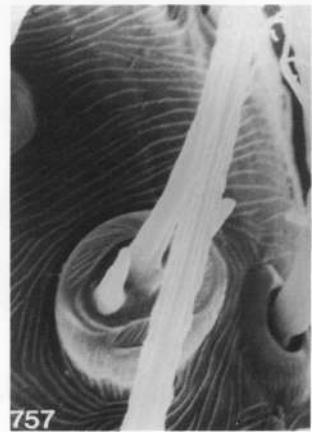
NEW RECORDS: NEW ZEALAND: *South*



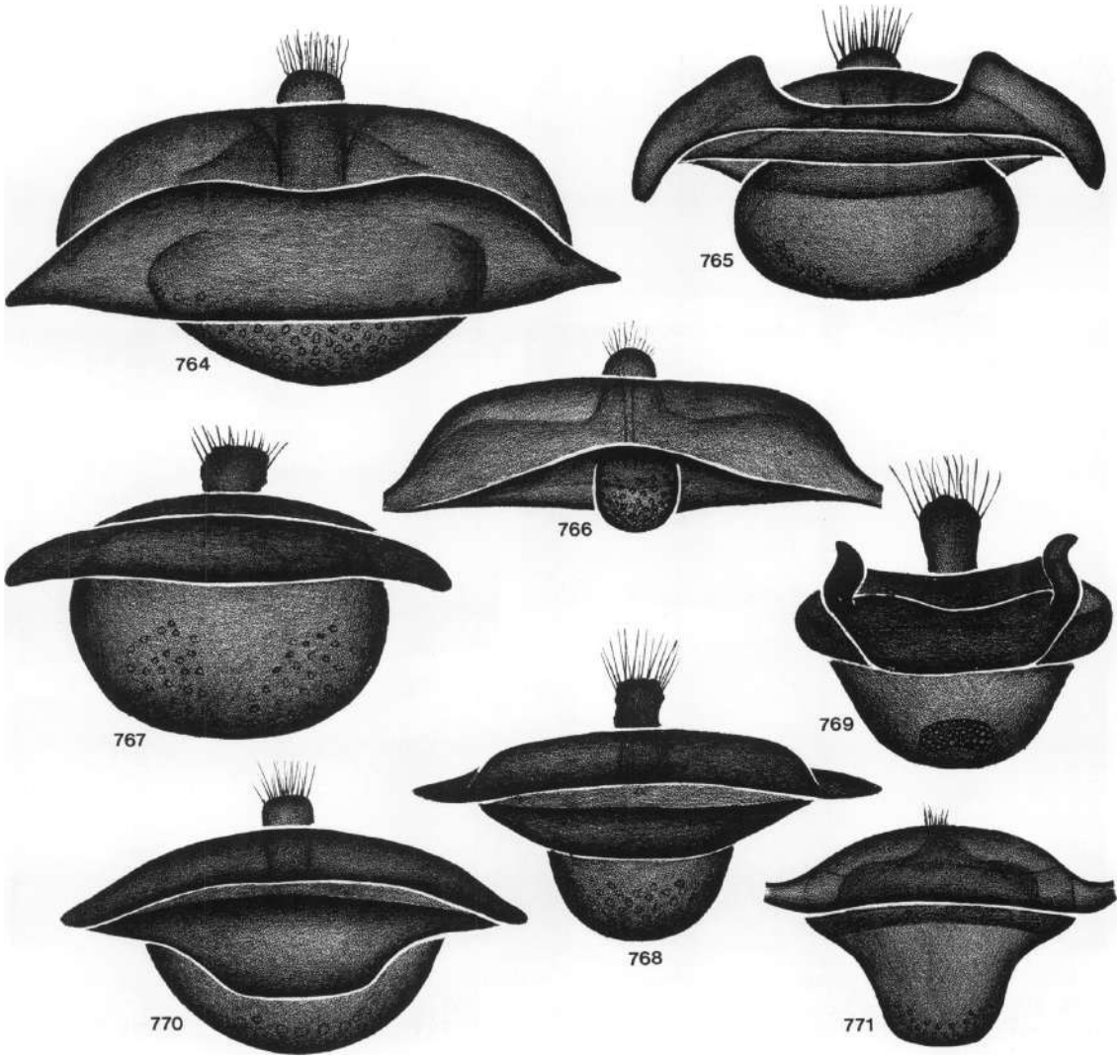








FIGS. 755–763. Structure of *Pounamuella*. 755–757. *P. australis* (Forster). 758–760. *P. ramsayi* (Forster). 761, 762. *P. vulgaris* (Forster). 763. *P. hauroko*, new species. 755, 756, 758, 759, 761–763. Male palpal bulb. 757, 760. Tarsal organ.



FIGS. 764–771. Female genitalia of *Pounamuella*. 764. *P. complexa* (Forster). 765. *P. insula*, new species. 766. *P. ramsayi* (Forster). 767. *P. australis* (Forster). 768. *P. vulgaris* (Forster). 769. *P.* sp., Waipoua State Forest. 770. *P. hollowayae* (Forster). 771. *P. hauroko*, new species.

Island: Fiordland: Cascade Creek, moss in *Nothofagus* forest, Oct. 6–Nov. 19, 1978–1979 (R. R. Forster, OMD, AMNH); Little Red Hill, Barrier Range, elevation 1067 m, litter and moss, seaward top of ridge, Feb. 2, 1975 (G. W. Ramsay, EDA).

DISTRIBUTION: Fiordland, South Island.

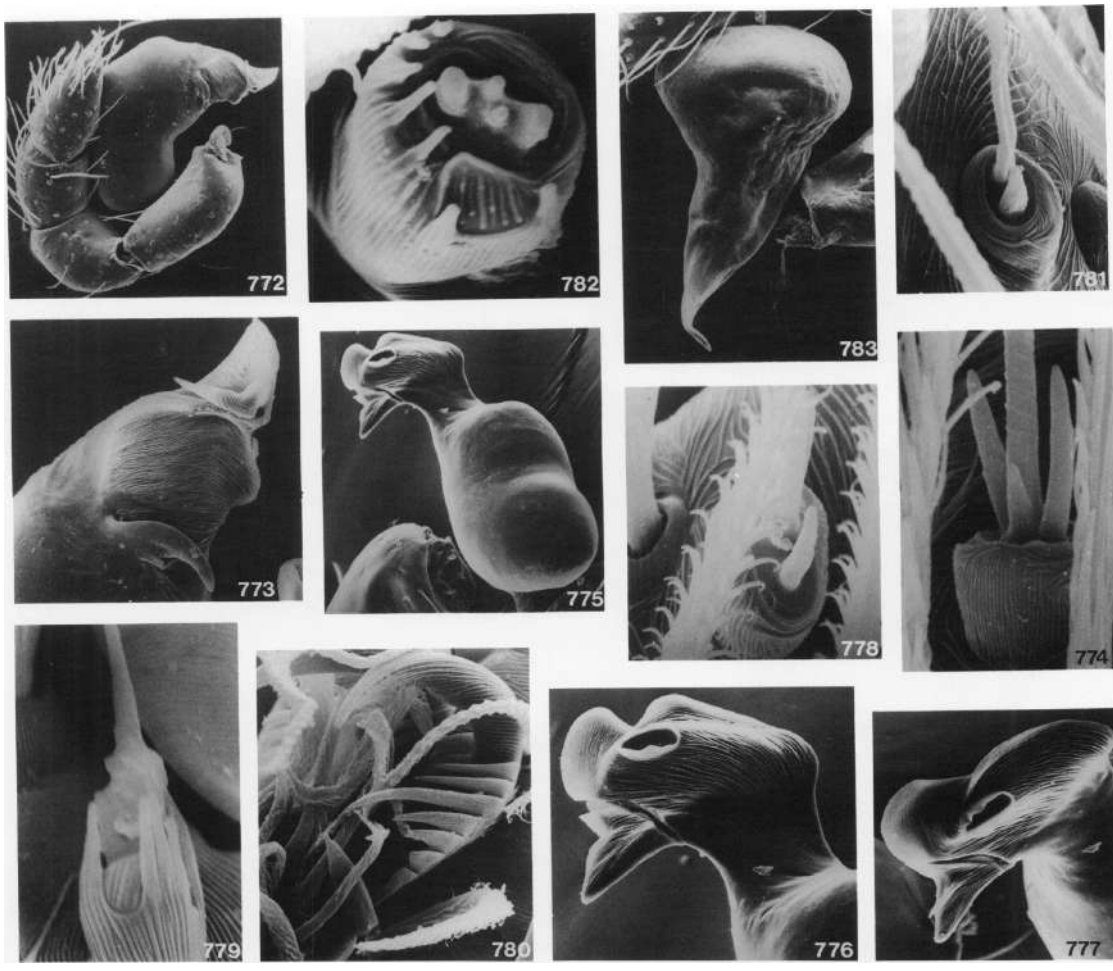
Pounamuella hauroko, new species
Figures 763, 771

TYPES: Male holotype and female paratype taken from moss in a *Nothofagus* forest at Lake Hauroko, Southland, South Island, New Zealand (March 13, 1983; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: The squat palpal bulb and the shape of the posterior receptaculum of the female genitalia distinguish this species from all others.

MALE: Total length 1.76. Carapace 0.85 long, 0.64 wide. Abdomen 0.88 long, 0.53 wide. Abdomen heavily shaded except for



FIGS. 772–783. Structure of *Pounamuella* and *Waipoua*. 772–774. *P. kuscheli*, new species. 775–778. *P. complexa* (Forster). 779. *P. insula*, new species. 780. *P. australis* (Forster). 781. *P. vulgaris* (Forster). 782, 783. *W. gressitti* (Forster). 772, 773, 775–777, 783. Male palpal bulb. 774, 778, 779, 781, 782. Tarsal organ. 780. Claw, leg III, male.

epigastric region, carapace pattern entire. Spines present: tibiae III, IV p0-0-1, v0-0-2, r0-0-1: metatarsi: III p0-0-1, v0-0-2, r0-0-1; IV d0-0-2, p0-0-1, v0-0-2, r0-0-1. Tarsal organ typical, with two short receptor spines in addition to long median spine. Claws typical.

	I	II	III	IV	Palp
Femur	0.60	0.60	0.48	0.68	0.25
Patella	0.28	0.27	0.24	0.28	0.21
Tibia	0.57	0.57	0.41	0.60	0.21
Metatarsus	0.48	0.45	0.41	0.60	–
Tarsus	0.28	0.28	0.28	0.28	0.21
Total	2.21	2.17	1.82	2.44	0.88

Palpal bulb relatively squat, as wide as long, with short distal embolus (fig. 763).

FEMALE: Total length 2.04. Carapace 0.87 long, 0.64 wide. Abdomen 1.05 long, 0.67 wide. Somatic characters as in male.

	I	II	III	IV	Palp
Femur	0.64	0.60	0.54	0.73	0.24
Patella	0.29	0.28	0.27	0.29	0.16
Tibia	0.52	0.49	0.43	0.56	0.15
Metatarsus	0.40	0.40	0.33	0.53	–
Tarsus	0.29	0.29	0.25	0.29	0.24
Total	2.14	2.06	1.82	2.40	0.79

Genitalia (fig. 771) with posterior receptac-

ulum constricted at sides but not forming double sac; secretory pores grouped across posterior surface.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Southland, South Island.

Pounamuella insula, new species
Figures 765, 779

TYPE: Female holotype taken in litter at an elevation of 40 m at Tawhiti Rahi, Shag Bay, Poor Knights Island, off North Island, New Zealand (September 20, 1980; J. C. Watt), deposited in EDA.

ETYMOLOGY: The specific name refers to the insular type locality.

DIAGNOSIS: This species can be separated from all others by the form of the female genitalia and also by the tarsal organ which, unlike those of other species, has a number of cuticular lobes on the margin of the basal mound.

FEMALE: Total length 1.60. Carapace 0.68 long, 0.32 wide. Abdomen 0.96 long, 0.40 wide. Abdomen evenly shaded with purplish pigment but pale in epigastric region, carapace with well developed pattern. Tarsal organ unusual because of presence of five long marginal lobes on basal mound and single receptor spine swollen at base (fig. 779). Claws typical.

	I	II	III	IV	Palp
Femur	0.44	0.40	0.37	0.55	0.28
Patella	0.24	0.20	0.19	0.25	0.12
Tibia	0.36	0.36	0.28	0.43	0.12
Metatarsus	0.36	0.33	0.28	0.41	—
Tarsus	0.20	0.20	0.20	0.23	0.20
Total	1.60	1.49	1.32	1.87	0.72

Genitalia (fig. 765) typical for genus but separated from those of all other species by having transverse muscle plate produced into hump on each side (similar modifications occur in one related but undescribed species from Waipoua State Forest, see fig. 769); secretory pores associated with posterior receptaculum spread over posterior surface (rather than grouped on oval poreplate as in Waipoua specimen).

MALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Hauraki Gulf Islands, off North Island.

NOTE: The tarsal organ is perhaps more similar to those of *Waipoua* than those of other *Pounamuella,* but the female genitalia support the latter placement.

Pounamuella kuscheli, new species
Figures 772–774

TYPE: Male holotype from litter taken at Lynfield, Auckland, North Island, New Zealand (August 24, 1974; G. Kuschel), deposited in EDA.

ETYMOLOGY: The specific name is a patronym in honor of the collector of the type.

DIAGNOSIS: The form of the palpal bulb and of the tarsal organ separate this species from all others.

MALE: Total length 1.40. Carapace 0.68 long, 0.56 wide. Abdomen 0.72 long, 0.48 wide. Abdomen evenly shaded with purplish pigment except for epigastric region; carapace pattern restricted to area immediately behind eyes but margins of carapace shaded. Spines present: tibiae III, IV v0-0-2; metatarsi III, IV p0-0-1, r0-0-1. Tarsal organ without marginal lobes on basal mound, with three accessory receptor lobes associated with median spine (fig. 774). Claws typical.

	I	II	III	IV	Palp
Femur	0.56	0.52	0.45	0.56	0.20
Patella	0.21	0.20	0.16	0.21	0.14
Tibia	0.44	0.37	0.29	0.48	0.14
Metatarsus	0.38	0.32	0.32	0.41	—
Tarsus	0.24	0.24	0.23	0.27	0.17
Total	1.83	1.65	1.45	1.93	0.65

Palpal bulb distinctive, with recurved distal spine and second prolateral spine on subdistal surface (figs. 772, 773).

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Auckland, North Island.

NOTE: The similarity of the palpal organ with that of *Waipoua hila* suggests that the two species could be closely related. Because the tarsal organ is typical for *Pounamuella,* we have placed the species in this genus instead, at least until females become available.

SUBANTARCTIA FORSTER

Subantarctia Forster, 1955, p. 170 (type species by original designation *Subantarctia turbotti* Forster).

DIAGNOSIS: This genus of large orsolobids can be separated from all New Zealand orsolobids except *Maoriata* by the larger size and from *Maoriata* by the different form of the male palpal bulb and the absence of abdominal pigmentation. In addition, the genus differs from all other orsolobids in the absence of a posterior receptaculum, which is represented by a secretory gland opening through a poreplate on the posterior face of the bursal cavity.

DESCRIPTION: Large orsolobids (total length 2.5–5.5) with abdomen pale, unpigmented; prosoma and appendages reddish brown; carapace and sternum very finely granulate; abdomen evenly clothed with short ciliate hairs, without scuta. Eyes relatively large; PME separated from laterals by approximately one-half their diameter. Chelicerae with two teeth on each margin. Sternum typical. Colulus with numerous hairs. Female genitalia similar in all species, with anterior receptaculum thick-walled lobe, distally irregular where pores situated; posterior receptaculum not present, represented only by poreplate on posterior wall of bursal cavity; transverse muscle plates present (in *S. turbotti* additional anteriorly directed plate present as commonly found in *Tasmanoonops*). Leg spines absent. Lateral flange of claws of legs I and II of females with different dentition from legs III and IV, latter similar to those of all legs of males (figs. 788, 789); typical tufts present below claws (fig. 823). Tarsal organ low, with few marginal lobes; two or three receptor lobes all small, usually contiguous; hood of bothrium smooth. Cymbium of male palp short, distally clavate, deeply excavated below; bulb large, directed forward, variously modified distally but embolus usually present as short, slender tube. Spiracles large, typically situated; tracheal trunks not linked.

DISTRIBUTION: North Island, South Island, Stewart Island, Auckland Islands, and Bounty Islands.

DISCUSSION: Five species of *Subantarctia* have been described previously. The genus was established for an Auckland Island species but subsequently (Forster, 1956) four further species were recorded from the South Island of New Zealand. Current collections consist of numerous specimens from both the North and South Islands that seem to represent a number of undescribed species; unfortunately, most of the specimens have been collected singly, from different localities, and it is virtually impossible to match males with females. Rather than establish a series of names that would likely fall as synonyms, we have restricted the descriptions to two South Island species which are well represented in collections and two further species that, although each is represented by only a single sex, extend the range of the genus to the North Island.

A single, immature specimen from the Bounty Islands is undoubtedly an orsolobid and probably belongs to *Subantarctia*. The spider fauna of this group of small, isolated islands (490 miles east of Stewart Island), which occupy a space 3 miles east to west and 2 miles north to south, is small but includes at least two very distinctive endemics (*Pacificana cockayni* and *Orepukia nummosa*). Hence it is highly probable that the orsolobid is also endemic to the islands.

Subantarctia is of great interest because, although it differs considerably from the rest of the New Zealand genera, it shares a number of characters, including size, with *Falklandia* from the Falkland Islands, *Tasmanoonops* from Australia, and *Orsolobus* from southern South America. The similarities between these four genera could indicate close phylogenetic relationship but, on the other hand, the main shared characteristics in the male and female genitalia, the claw structure, and the sense organs could alternatively be considered states plesiomorphic at the family level.

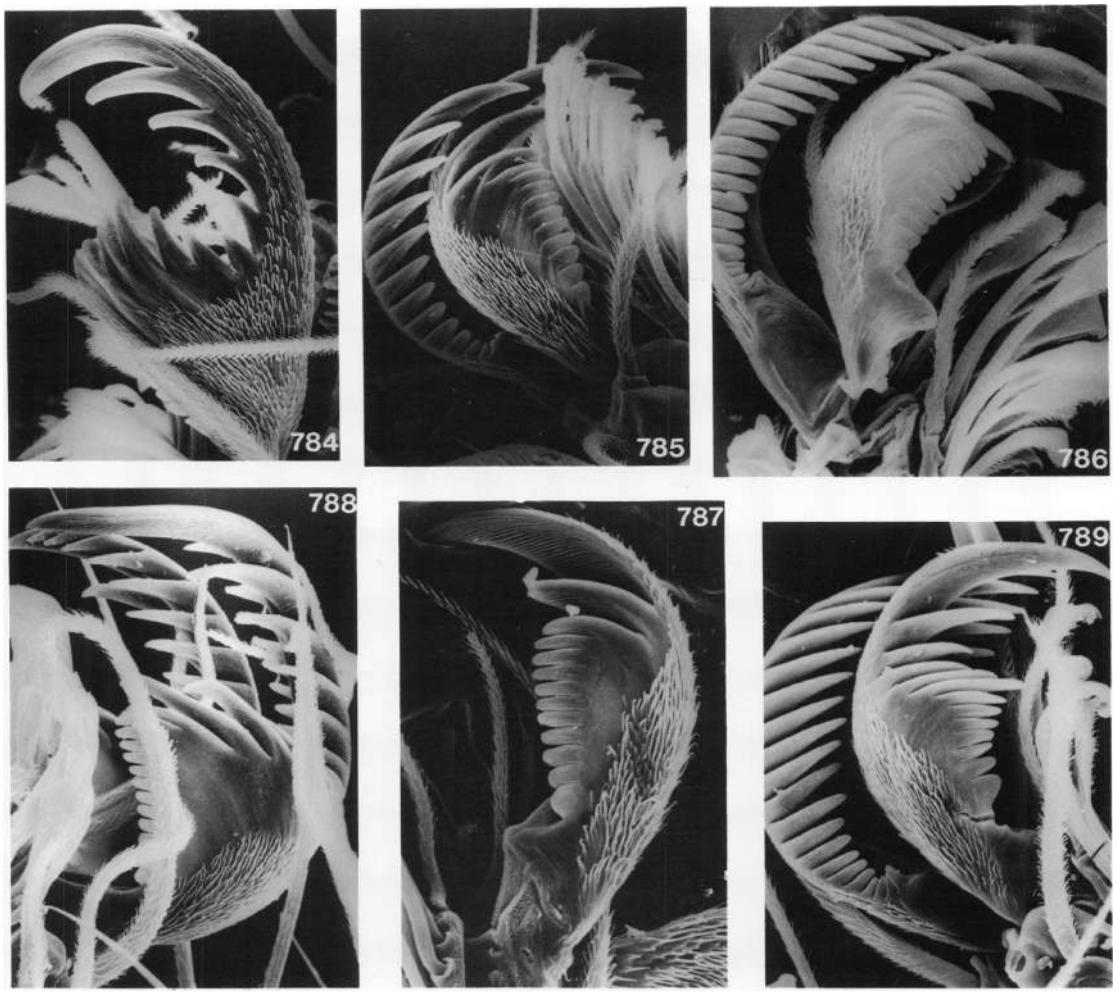
The five species recorded earlier are all clearly defined in the original descriptions; we have illustrated the female genitalia where possible and provided illustrations of other diagnostic features for comparison with the new species described below.

Subantarctia turbotti Forster

Figures 788, 789, 797, 805, 806, 816, 872

Subantarctia turbotti Forster, 1955, p. 170, figs. 1–5 (female holotype from east shore of North Arm, Carnley Harbour, Auckland Island, in AMA, examined), 1964, p. 65, figs. 23–25.

NOTE: Although clearly related to the mainland New Zealand species, *S. turbotti* is



FIGS. 784–789. Claws of *Subantarctia*. 784–787. *S. trina*, new species. 788, 789. *S. turbotti* Forster. 784, 788. Leg I, female. 785. Leg IV, female. 786, 789. Leg I, male. 787. Leg IV, male.

readily separated from them by the form of the male bulb (figs. 805, 806) and female genitalia, which have a longitudinal plate associated with the anterior receptaculum (as in some *Tasmanoonops*) and a more strongly developed posterior poreplate (fig. 797). The tarsal organ is shown in figure 816.

DISTRIBUTION: Numerous specimens have been collected from most parts of Auckland Island and also a number of the offshore islets. All apparently belong to a single species. Intensive collecting on the more southerly Campbell Island has failed to record the genus, but it might be represented in the Bounty Islands to the east.

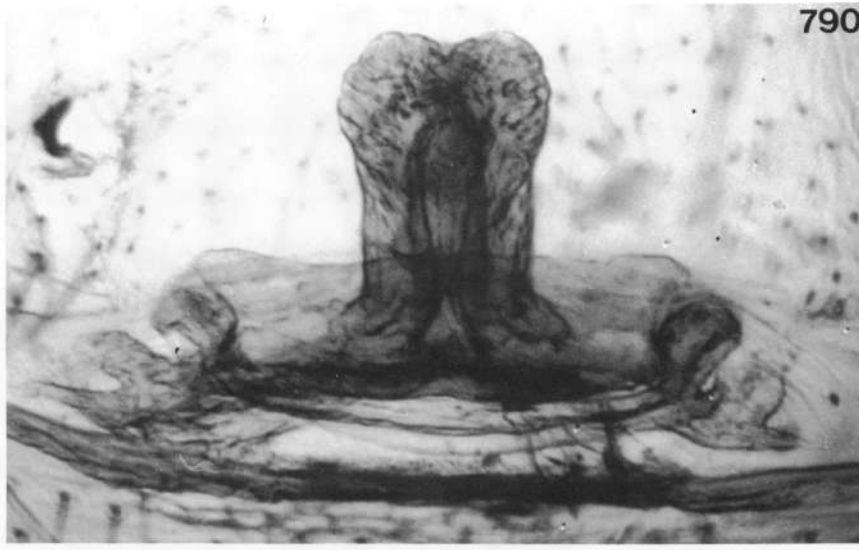
Subantarctia dugdalei Forster

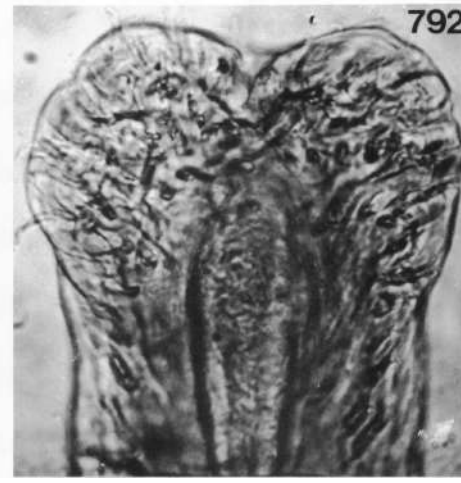
Figures 790–792, 799, 820, 823, 827

Subantarctia dugdalei Forster, 1956, p. 91, figs. 1–8 (male holotype from Deans Bush, Christchurch, Canterbury, South Island, New Zealand, in CMC, examined).

NOTE: This species is distinguished from all others by the absence of a secondary lobe on the male palp. The female genitalia are also distinctive (figs. 790–792, 799). The tarsal organ, not previously illustrated, is shown in figure 820.

DISTRIBUTION: A few further specimens have been available from localities close to





FIGS. 790–792. *Subantarctia dugdalei* Forster. 790. Female genitalia. 791. Lateral portion of muscle plate showing lateral receptaculum. 792. Distal portion of anterior receptaculum; note thick wall with secretory ducts leading through into lumen.

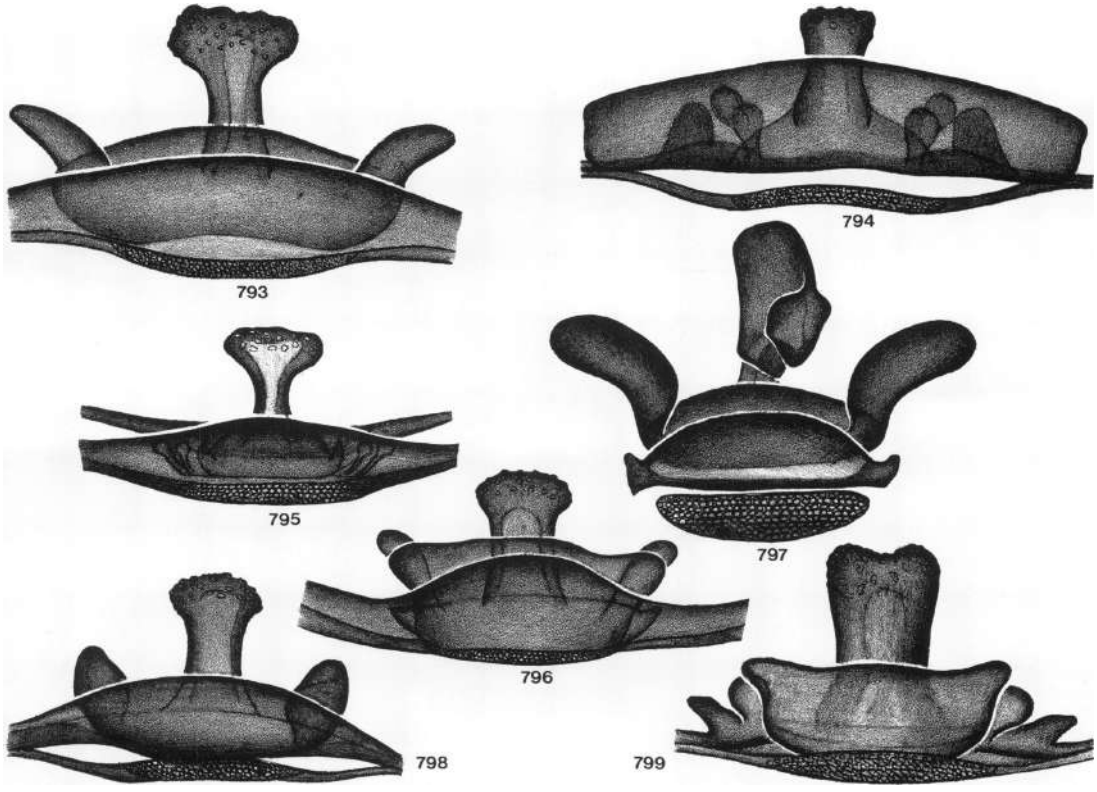
those previously recorded. The species appears to be restricted to the central portion of Canterbury, South Island, from Christchurch inland to the foothills.

Subantarctia fiordensis Forster
Figures 798, 807, 808, 815

Subantarctia fiordensis Forster, 1956, p. 97, figs. 9–15 (male holotype from Caswell Sound, Fiordland, South Island, New Zealand, in CMC, examined).

NOTE: The male bulb is relatively broad distally (figs. 807, 808) and the female genitalia (not previously examined) are distinctive (fig. 798). The tarsal organ is shown in figure 815.

DISTRIBUTION: Fiordland, South Island. A few specimens from Wilmot Pass and Cascade Creek have been available in addition to those originally examined. Both localities are within the previously recorded distributional range.



FIGS. 793–799. Female genitalia of *Subantarctia*. 793. *S. florae* Forster. 794. *S. muka*, new species. 795. *S. trina*, new species. 796. *S. centralis*, new species. 797. *S. turbotti* Forster. 798. *S. fiordensis* Forster. 799. *S. dugdalei* Forster.

Subantarctia florae Forster
Figures 793, 811, 812, 818

Subantarctia florae Forster, 1956, p. 97, figs. 16–18 (male holotype from Flora Saddle, Mount Arthur Tableland, Nelson, South Island, New Zealand, in NMW, examined).

NOTE: The shape of the palpal bulb is distinctive (figs. 811, 812). The tarsal organ is shown in figure 818, the female genitalia in figure 793.

DISTRIBUTION: Nelson, South Island. A number of specimens from localities near the type locality were available when the species was described. Current collections include individual specimens, mainly females, from other Nelson localities. Additional females from Karamea, which could belong to this species, suggest that it may be more widely distributed in the Nelson region.

Subantarctia stewartensis Forster
Figure 821

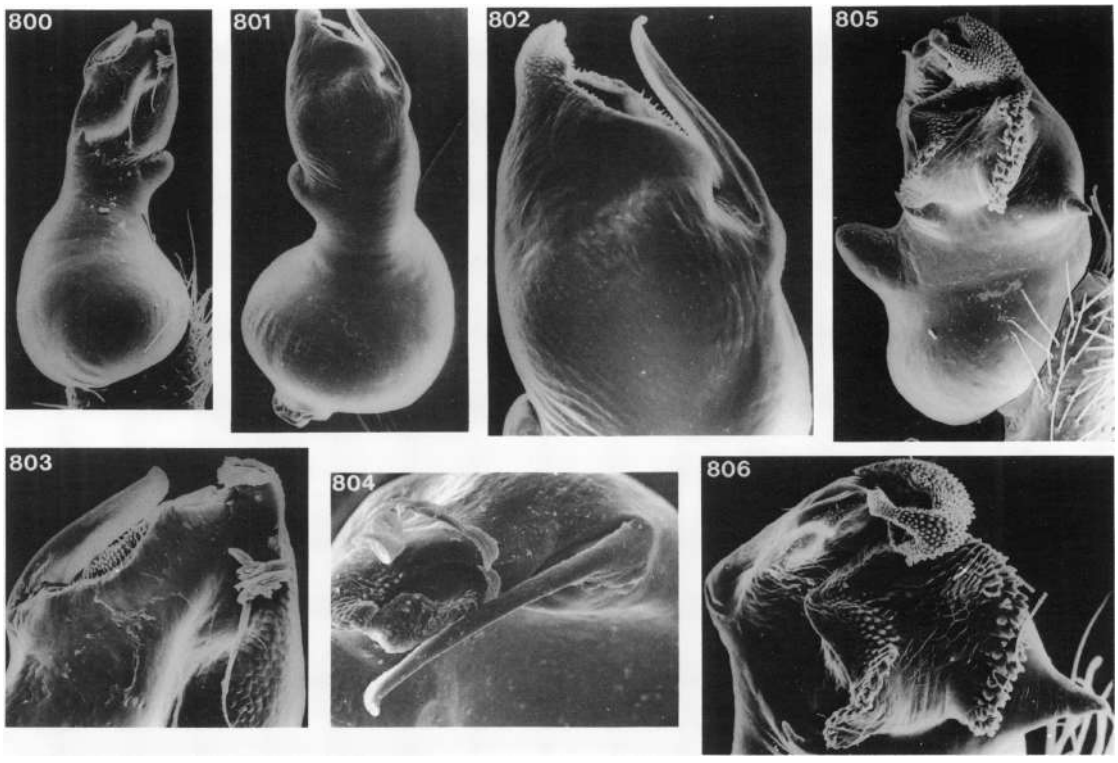
Subantarctia stewartensis Forster, 1956, p. 99, figs. 19, 20 (male holotype from Stewart Island, in CMC, examined).

NOTE: This relatively large species (total length of male 4.60) is readily recognized by the shape of the palpal bulb, which has a strongly developed lateral lobe. The tarsal organ is distinctive, lacking the marginal lobes characteristic of all other species (fig. 821). No further specimens have been available for study and the female genitalia remain unknown.

DISTRIBUTION: Stewart Island.

Subantarctia trina, new species
Figures 784–787, 795, 800–804, 817

TYPES: Male holotype and female paratype from detritus at the base of tussocks at Flag-



FIGS. 800–806. Male palp of *Subantarctia*. 800–804. *S. trina*, new species. 805, 806. *S. turbotti* Forster.

staff, near Dunedin, Otago, South Island, New Zealand (March 8, 1982; R. R. Forster), deposited in OMD.

ETYMOLOGY: The specific name is an arbitrary combination of letters.

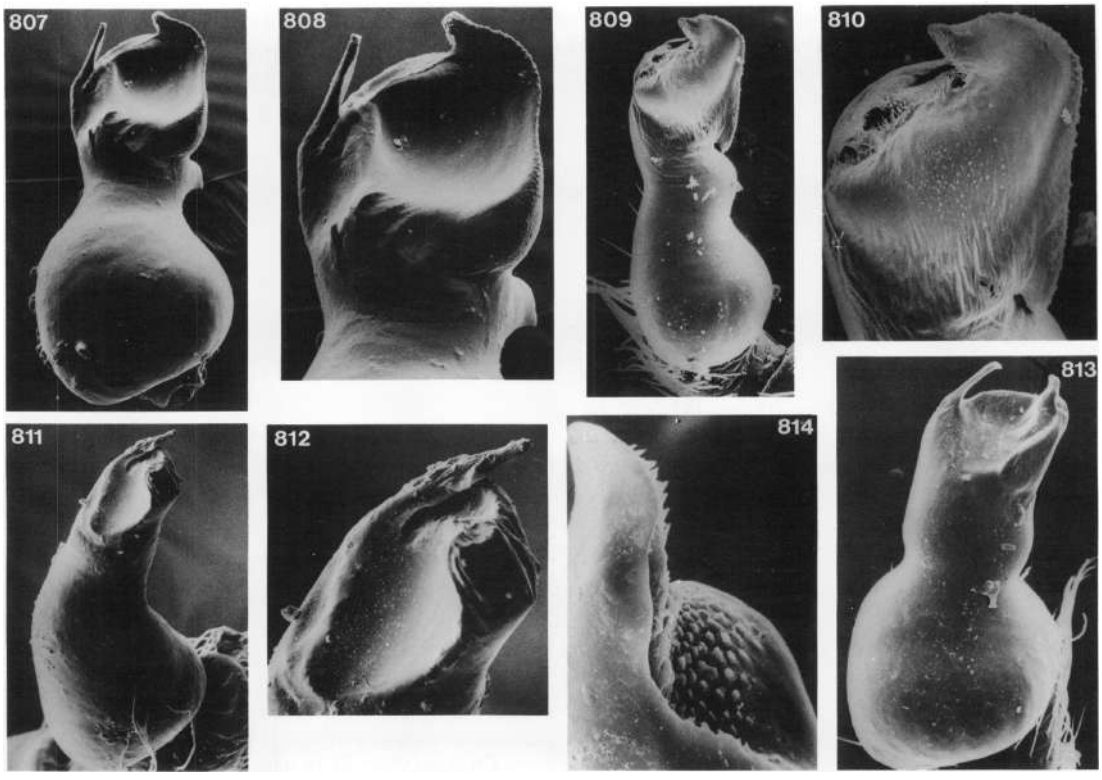
DIAGNOSIS: This species can be separated from all others by the shape of the palpal bulb and the structure of the female genitalia. It seems most closely related to *S. centralis* but can be readily separated from it by the distal portion of the palpal bulb and the stouter anterior receptaculum.

MALE: Total length 4.08. Carapace 1.88 long, 1.44 wide. Abdomen 2.16 long, 1.20 wide. Tarsal organ as in figure 817. Claws of legs I and II with teeth on lateral flange as in figure 786, with three teeth extending beyond flange; claws of legs III and IV similar but all outer teeth associated with flange (fig. 787).

	I	II	III	IV	Palp
Femur	1.80	1.80	1.24	1.80	0.44
Patella	0.72	0.81	0.48	0.64	0.37
Tibia	1.36	1.56	0.87	1.32	0.37
Metatarsus	1.32	1.60	1.00	1.40	—
Tarsus	0.72	0.72	0.48	0.64	0.28
Total	5.92	6.49	4.07	5.80	1.46

Bulb relatively stout, with distal portion clearly demarcated but relatively broad (figs. 800–804); embolus typical slender tube, slightly curved distally; lateral lobe prominent, evenly rounded, second small sharp process present on outer surface.

FEMALE: Total length 5.20. Carapace 2.00 long, 1.72 wide. Abdomen 3.00 long, 1.96 wide. Somatic characters as in male except claws of legs I and II as in figure 784 but those of legs III and IV similar to male (fig. 785).



FIGS. 807–814. Ventral view of palpal bulb of *Subantarctia*. 807, 808. *S. fiordensis* Forster. 809, 810. *S. penara*, new species. 811, 812. *S. florae* Forster. 813, 814. *S. centralis*, new species.

	I	II	III	IV	Palp
Femur	1.80	2.00	1.60	1.88	0.56
Patella	0.84	0.81	0.76	0.80	0.36
Tibia	1.23	1.40	0.85	1.40	0.36
Metatarsus	1.40	1.61	1.08	1.45	—
Tarsus	0.72	0.68	0.44	0.60	0.68
Total	5.99	6.50	4.73	6.13	1.96

Anterior receptaculum with narrow stem, flanked by small lateral flap with two small spherical receptacula at base (fig. 795).

OTHER MATERIAL EXAMINED: NEW ZEALAND: *South Island:* Otago: Flagstaff, litter at base of tussock, Dec. 20–Feb. 15, 1978–1982 (R. R. Forster, OMD, AMNH); Leith Saddle, Dec.–Jan. 1975–1982 (R. R. Forster, A. C. Harris, OMD); Mount Cargill, Apr. 10, 1950 (B. J. Marples, OMD); Opoho Bush, Jan. 11, 1977 (C. L. Wilton, OMD); Port Chalmers, Longbeach Road, above Deborah Bay, June 5, 1966 (C. L. Wilton, OMD); Sullivans Dam, Mar. 31, 1960 (J. Kikkawa, OMD); Trotters Gorge, Dec. 20, 1978 (R. R. Forster, OMD).

DISTRIBUTION: This species appears to be limited to the coastal stretch of mid-Otago but is replaced by *S. centralis* inland. Specimens have been collected from litter in both tussock grassland and mixed forest.

Subantarctia penara, new species
Figures 809, 810, 822

TYPE: Male holotype taken from moss at an elevation of 488 m at Kirikiri Saddle, North Island, New Zealand (October 21, 1976; J. S. Dugdale), deposited in EDA.

ETYMOLOGY: The specific name is an arbitrary combination of letters.

DIAGNOSIS: This species can be separated

from all others by the distinctive tarsal organ, which has the marginal lobes grouped and three separated receptor lobes, as well as by the shape of the palpal bulb.

MALE: Total length 3.68. Carapace 1.84 long, 1.40 wide. Abdomen 2.00 long, 1.40 wide. Tarsal organ distinctive (fig. 822), with four small, widely spaced lobes on upper margin of basal mound and three midlateral groups of lobes on posterior surface; receptor lobes not fused as in all other species, represented by three small but discrete tubercles. Claws typical.

	I	II	III	IV	Palp
Femur	1.44	1.68	1.28	1.60	0.48
Patella	0.63	0.64	0.64	0.64	0.32
Tibia	1.12	1.40	0.84	1.16	0.35
Metatarsus	1.12	1.23	0.87	1.13	—
Tarsus	0.56	0.62	0.53	0.53	0.28
Total	4.87	5.57	4.16	5.06	1.43

Palpal bulb (figs. 809, 810) with basal half relatively slender, little wider than distal portion.

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Mid-North Island.

Subantarctia muka, new species

Figure 794

TYPE: Female holotype taken from litter at an elevation of 450 m on Mangamuka Summit, Northland, North Island, New Zealand (December 13, 1976; B. M. May), deposited in EDA.

ETYMOLOGY: The specific name is an arbitrary combination of letters.

DIAGNOSIS: This species can be separated from all other females by the form of the genitalia, and from the other North Island species *S. penara* by the form of the tarsal organ.

FEMALE: Total length 4.18. Carapace 2.00 long, 1.60 wide. Abdomen 2.20 long, 1.52 wide. Tarsal organ difficult to examine in detail because legs coated with encrustation; although receptors may be separate as in *S. penara*, lobes associated with basal mound apparently not grouped on posterior surface. Claws typical.

	I	II	III	IV	Palp
Femur	1.48	1.76	1.36	1.72	0.48
Patella	0.64	0.76	0.48	0.64	0.24
Tibia	1.20	1.48	1.00	1.24	0.27
Metatarsus	1.28	1.42	1.08	1.00	—
Tarsus	0.56	0.53	0.52	0.56	0.36
Total	5.16	5.95	4.44	5.16	1.35

Genitalia (fig. 794) with muscle plate broad in comparison with all other species, two secondary receptacula on each side near short lateral lobe distinct.

MALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Northland, North Island.

Subantarctia centralis, new species

Figures 796, 813, 814, 819

TYPES: Male holotype and female paratype from a pitfall trap in tussock grassland at an elevation of 800 m at Rocklands, Otago, South Island, New Zealand (February 13–29, 1979; B. I. P. Barratt), deposited in OMD.

ETYMOLOGY: The specific name refers to central Otago, where the species occurs.

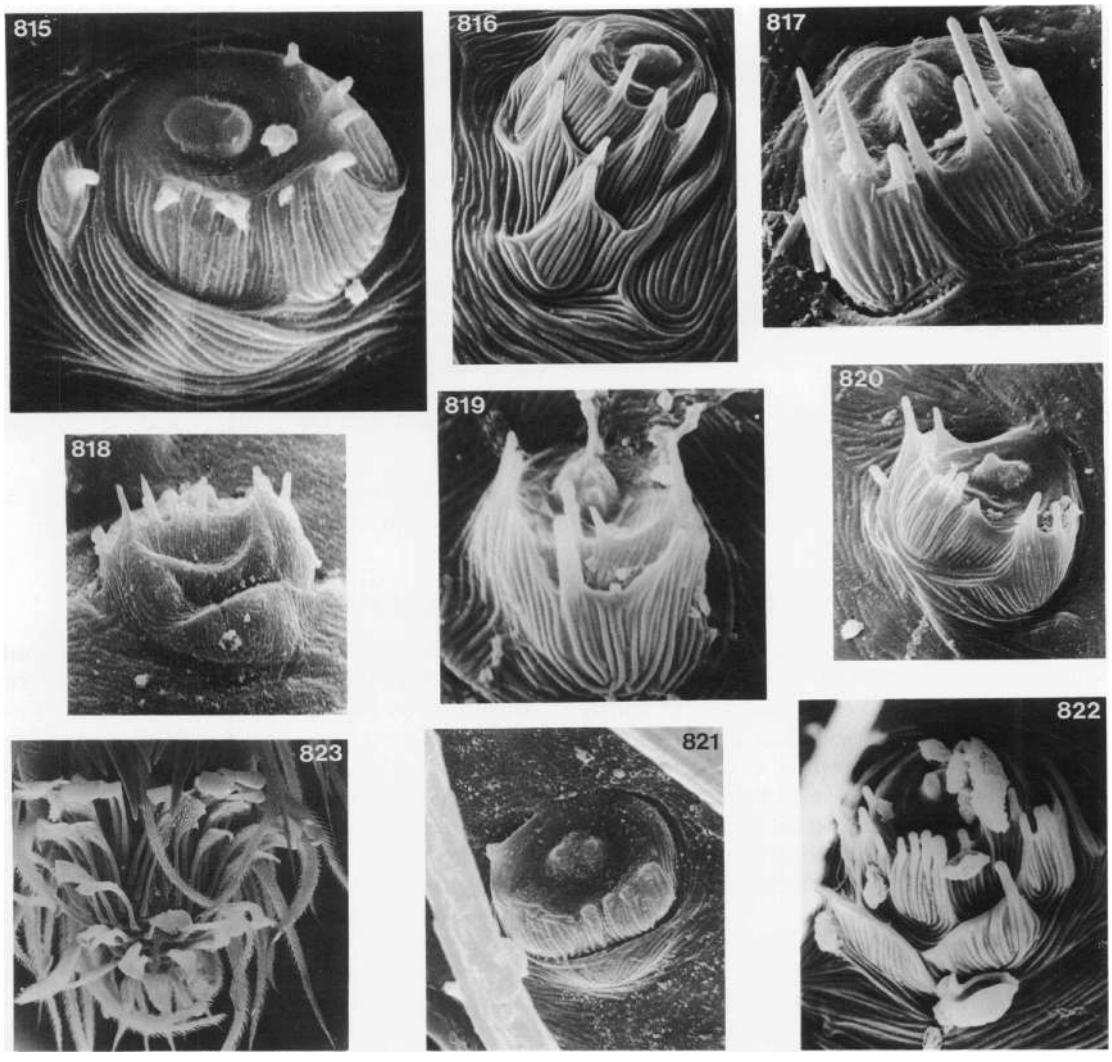
DIAGNOSIS: This species seems closely related to *S. trina* from coastal Otago but can be separated from it by differences in the female genitalia and the stouter distal half of the male palpal bulb, as well as the reduction of the lateral lobe.

MALE: Total length 3.16. Carapace 1.44 long, 1.13 wide. Abdomen 1.72 long, 1.12 wide. Tarsal organ similar to that of *S. trina* but marginal lobes fewer, more widely spaced (fig. 819). Claws typical.

	I	II	III	IV	Palp
Femur	0.91	1.12	0.80	1.12	0.36
Patella	0.56	0.56	0.45	0.53	0.24
Tibia	0.80	0.80	0.56	0.77	0.34
Metatarsus	0.73	0.83	0.60	0.82	—
Tarsus	0.48	0.48	0.36	0.48	0.21
Total	3.48	3.79	2.77	3.72	1.15

Palpal bulb (figs. 813, 814) with distal portion wider than in *S. trina*, excavated region shorter; lateral lobe prominent in *S. trina* here reduced to low mound.

FEMALE: Total length 3.27. Carapace 1.60 long, 1.21 wide. Abdomen 2.00 long, 1.36 wide. Somatic characters as in male.



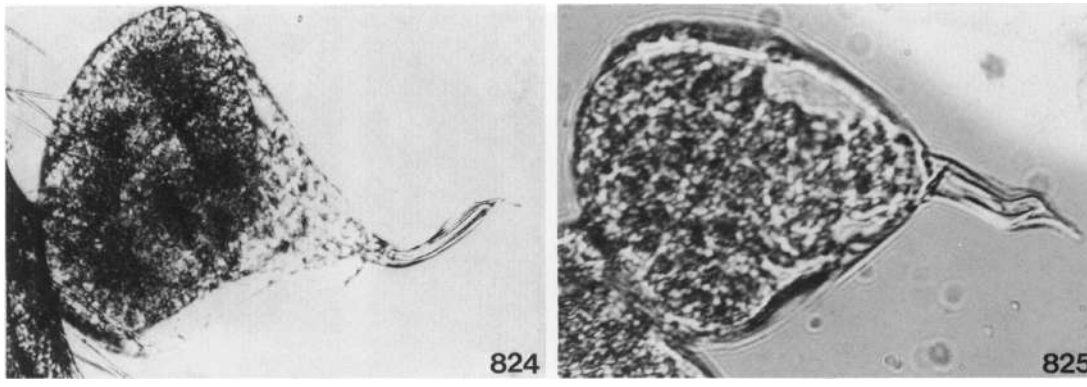
FIGS. 815–823. Tarsal organ (815–822) and claw tuft (823) of *Subantarctia*. 815. *S. fiordensis* Forster. 816. *S. turbotti* Forster. 817. *S. trina*, new species. 818. *S. florae* Forster. 819. *S. centralis*, new species. 820, 823. *S. dugdalei* Forster. 821. *S. stewartensis* Forster. 822. *S. penara*, new species.

	I	II	III	IV	Palp
Femur	1.05	1.05	0.84	1.05	0.36
Patella	0.48	0.51	0.40	0.51	0.24
Tibia	0.73	0.84	0.56	0.72	0.24
Metatarsus	0.75	0.84	0.60	0.81	—
Tarsus	0.44	0.47	0.40	0.44	0.40
Total	3.45	3.71	2.80	3.53	1.24

Genitalia (fig. 796) with muscle plates more strongly developed than in *S. trina*, anterior receptaculum stouter.

OTHER MATERIAL EXAMINED: NEW ZEALAND: *South Island:* Otago: Millers Flat, elevation 500 m, pitfall in tussock grassland, Sept.–Mar. 1978–1979 (B. I. P. Barratt, OMD, AMNH); Rocklands, elevation 800 m, pitfall in tussock, Feb. 28–Mar. 14, 1970 (B. I. P. Barratt, OMD).

DISTRIBUTION: Central Otago, South Island. A few specimens from higher altitudes on the Rock and Pillar Range and the Old



FIGS. 824, 825. Male palp. 824. *Tangata murihiku*, new species. 825. *Duripelta koomaa*, new species.

Man Range have been examined. They may belong to this species, but further material is needed before an extension of the range to the subalpine habitat can be confirmed.

NOTES ON THE SUPERFAMILY DYSDEROIDEA

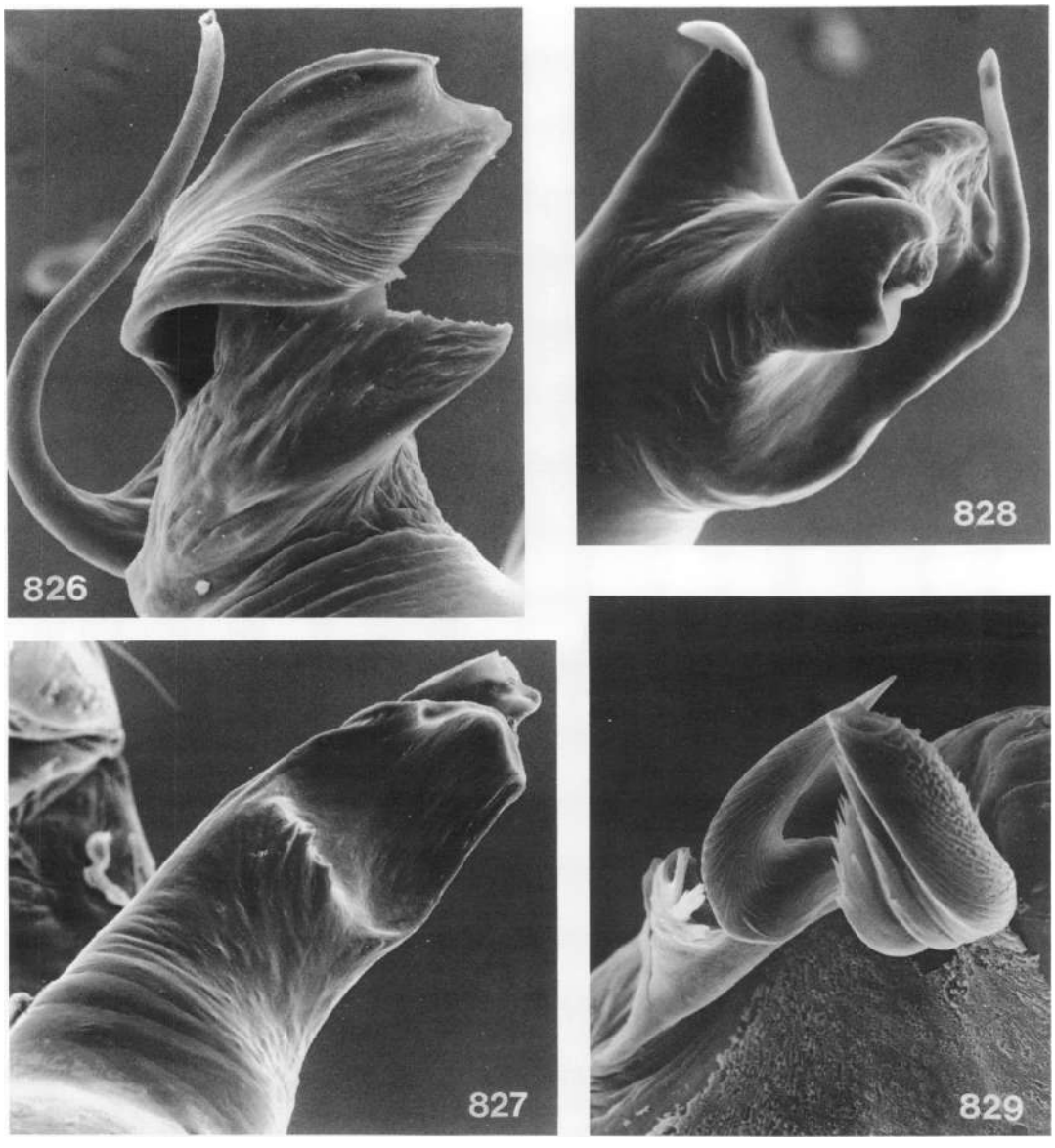
We limit the superfamily Dysderoidea to four families: the Dysderidae, Segestriidae, Oonopidae, and the newly established family Orsolobidae. The association of the first three families has never been in doubt, and the present paper clearly relates the Orsolobidae with them. Considerable difference of opinion has been expressed, however, on the inclusion within the Dysderoidea of at least five other families.

There are two synapomorphies which seem to link the four families we place within the superfamily. The first (and the classical basis for the grouping) is the advancement of a pair of posterior tracheal spiracles to a position just behind the spiracles of the booklungs, where they each lead to a single, large, anteriorly directed tracheal trunk. The second is the development of a second portion of the internal female genitalia associated with the posterior wall of the bursal cavity. This is a very rare development in spiders, being recorded elsewhere (to our knowledge) only in the Thaididae, Archaeidae, and Pholcidae, three disparate families, none of which have ever been linked with the dysderoids (or with each other).

The five other families which have occasionally been included in the Dysderoidea are the Caponiidae (included, for example, by Beatty, 1970), Tetrablemmidae (included, for example, [as oonopids] by Gerhardt and Kaestner, 1938), Hadrotarsidae (included, for example, by Bristowe, 1938), Telemidae (included, for example, by Levi, 1982), and Leptonetidae (included, for example, by Kaestner, 1968). None of these families share with the dysderoids a bipartite female genitalic organization and for that reason should in our view be placed outside the superfamily.

The question remains as to whether any of those groups could represent, in sum or in part, the sister group of the superfamily. That possibility seems at all likely only for the Caponiidae and Tetrablemmidae. Caponiids do resemble dysderoids in having the posterior pair of spiracles advanced anteriorly to a position near the epigastric furrow; they differ in having the anterior booklungs transformed into tracheae, and in having three large tracheal trunks (two extending anteriorly and one extending posteriorly) originating from each posterior spiracle (fig. 889). Both of these differences, however, are presumably caponiid autapomorphies and are therefore uninformative in the present context.

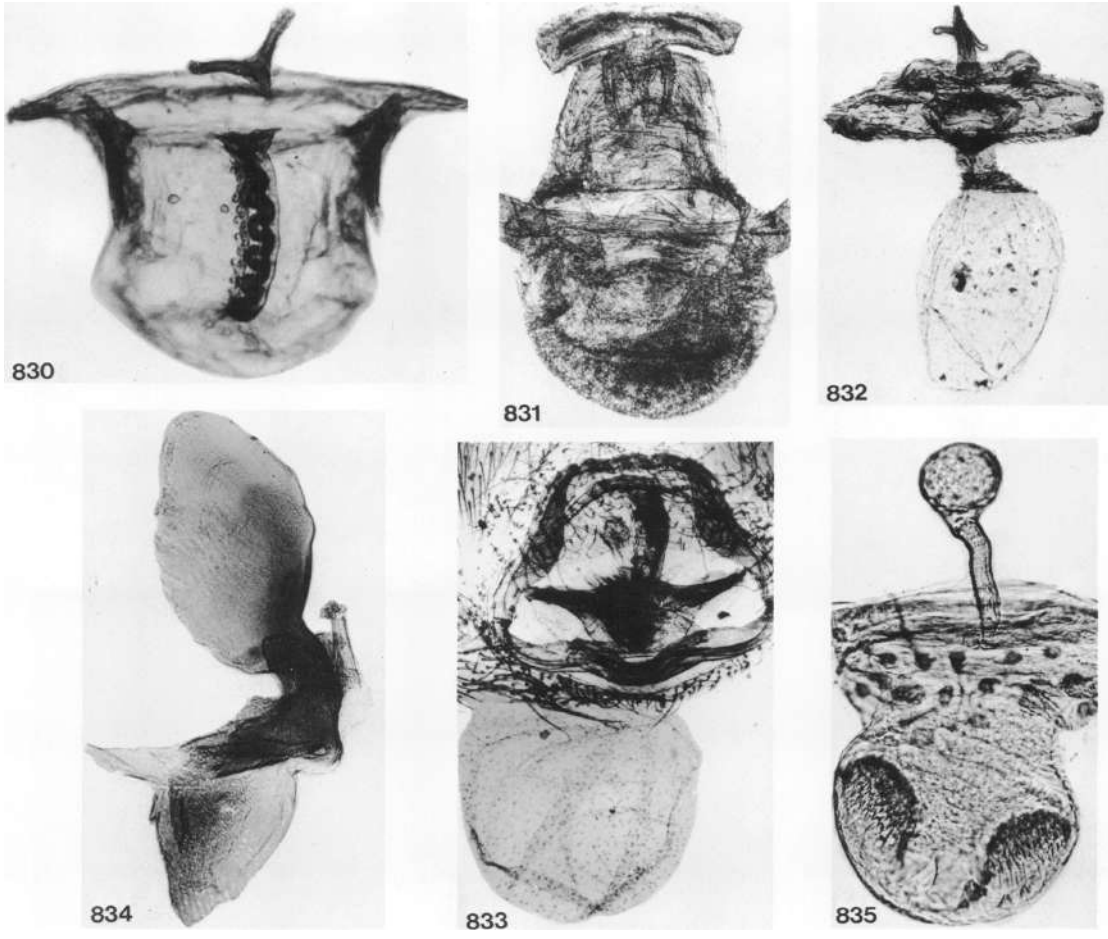
Interestingly, the Tetrablemmidae also appear to possess relict tracheal structures which could indicate that the primitive tracheal system in the family did not differ strongly from the caponiid organization. Although most tetrablemmids have little more than a small



FIGS. 826–829. Distal portion of male palpal bulb. 826. *Harpactea hombergi* (Scopoli), Dysderidae. 827. *Subantarctia dugdalei* Forster, Orsolobidae. 828. *Gippsicola* sp., Segestriidae. 829. *Dysderina dura* Chickering, Oonopidae.

median internal lobe associated with the greatly reduced third abdominal segment, there are some genera (such as *Brignoliella*, fig. 888) in which there are paired spiracles, each leading into short double trunks that extend anteriorly and that could well be vestiges of a once more extensive system.

If one accepts all of these tracheal similarities as synapomorphies, they suggest that the Caponiidae and Tetrablemmidae together represent the sister group of dysderoids. That hypothesis, however, requires the acceptance of two instances of homoplasy. Caponiids frequently have the number of eyes reduced from eight to two, but in those cases it is the main eyes (the anterior median pair) that are



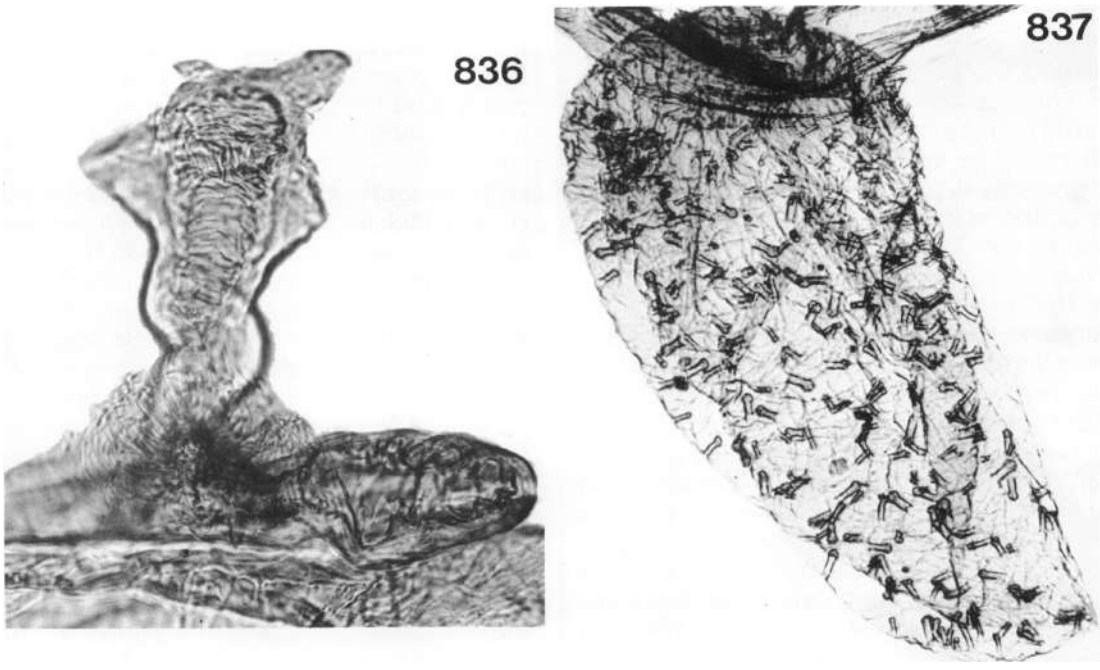
FIGS. 830–835. Female internal genitalia. 830. *Gamasomorpha* sp., Oonopidae. 831. *Dysdera crocata* C. L. Koch, Dysderidae. 832. *Tasmanoonops elongatus*, new species, Orsolobidae. 833. *T. complexus*, new species, Orsolobidae. 834. Same, lateral view of median and lateral muscle plates, with anterior receptaculum attached to base of median plate. 835. *Duripelta borealis* Forster, Orsolobidae.

retained. Dysderoids and tetrablemmids, however, lack anterior median eyes; this loss must have occurred independently in the two groups if the above grouping is correct. The second instance of homoplasy is the presence of a cheliceral lamella in both caponiids and tetrablemmids; a cheliceral lamella is characteristic of Scytodoidea rather than Dysderoidea and hence argues against associating caponiids and tetrablemmids with dysderoids. It should be noted, however, that a cheliceral lamella also occurs in other groups, such as the Eresidae, that have not traditionally been considered scytodoids.

With regard to the Hadrotarsidae, Telemidae, and Leptonetidae, we know of no convincing reasons why these families should be associated with the dysderoids, and suspect that the problem involved is not so much their relationship to the dysderoid groups as it is to where else they might be placed. The female genitalia, the tracheal developments, the form of the colulus, the tarsal organ morphology, and many other characters militate against their inclusion in, or close relationship with, the Dysderoidea.

MALE PALP

Because of the widespread occurrence of a simple, pyriform bulb among haplogyne spi-



FIGS. 836, 837. *Ariadna barbigera* Simon, Segestriidae, female internal genitalia. 836. Anterior receptaculum. 837. Posterior receptaculum.

ders (including mygalomorphs), the assumption has often been made that this must be the primitive form. That assumption has been questioned recently by Kraus (1978), who suggested that the primitive spider bulb was in fact relatively complex (consisting of three sections divided by hematodochae) and that the simple bulb commonly found in haplogynes is derived. It is this interpretation that best fits the diversity found within the dysderoid spiders.

It seems probable that the primitive dysderoid embolus was tubular rather than spiniform and was flanked by a number of flaps and processes, the functions of which are not known. The similarity of the bulb of *Chileolobus* with those of the Gradungulidae even suggests that the primitive bulb itself may have been subdivided. We have illustrated the embolus and accessory structures of species from each of the four dysderoid families (figs. 826–829) which demonstrate a degree of similarity more reasonably explained by common ancestry than by convergence. In contrast, the loss of the secondary processes and the elongation of the embolus to form a spiniform duct appear to be repeated in different lineages, producing similar end results.

The spermophore within the bulb is much the same in all dysderoid families and there are no modifications correlated with the presence or absence of accessory processes. It is always a loosely coiled cylinder enclosed in a large secretory gland discharging through a band of pores extending along the full length of the structure. The distal duct passing into the embolus is slender and in most species does not extend far behind the base of the embolus, but in some Oonopidae there is a tendency for the distal duct to become elongated and extend back into the bulb itself.

FEMALE GENITALIA

The female genitalia of all the Oonopidae, Dysderidae, and Segestriidae are composed of two distinct elements, one associated with the anterior wall of the bursa and the other with the posterior wall. Furthermore, in all these families the receptaculate origin of both elements is clear and it could be concluded

on the basis of this information that the primitive genitalic form consisted of receptacula leading from both faces of the bursa.

This hypothesis would also hold satisfactorily for the great majority of orsolobids, but there is one genus which suggests that the hypothesis is false and that the hypothetical primitive configuration needs to be moved a stage back along the evolutionary route. The New Zealand genus *Subantarctia* is characterized by the absence of a posterior receptaculum; hence the question which arises is whether this has developed by loss or, alternatively, whether the configuration in this genus is primitive.

In *Subantarctia* there is, instead of a posterior receptaculum, a large secretory gland associated with the posterior wall of the bursa which discharges directly into the bursal cavity through a heavily sclerotized poreplate (figs. 790–799). Comparative studies of the genitalia of other haplogyne spiders (Forster, in prep.) suggest that the receptaculate formation of the female genitalia generally occurs through the invagination of such a poreplate. This poreplate organization ranks high, therefore, as the probable ancestral form which preceded receptaculate development.

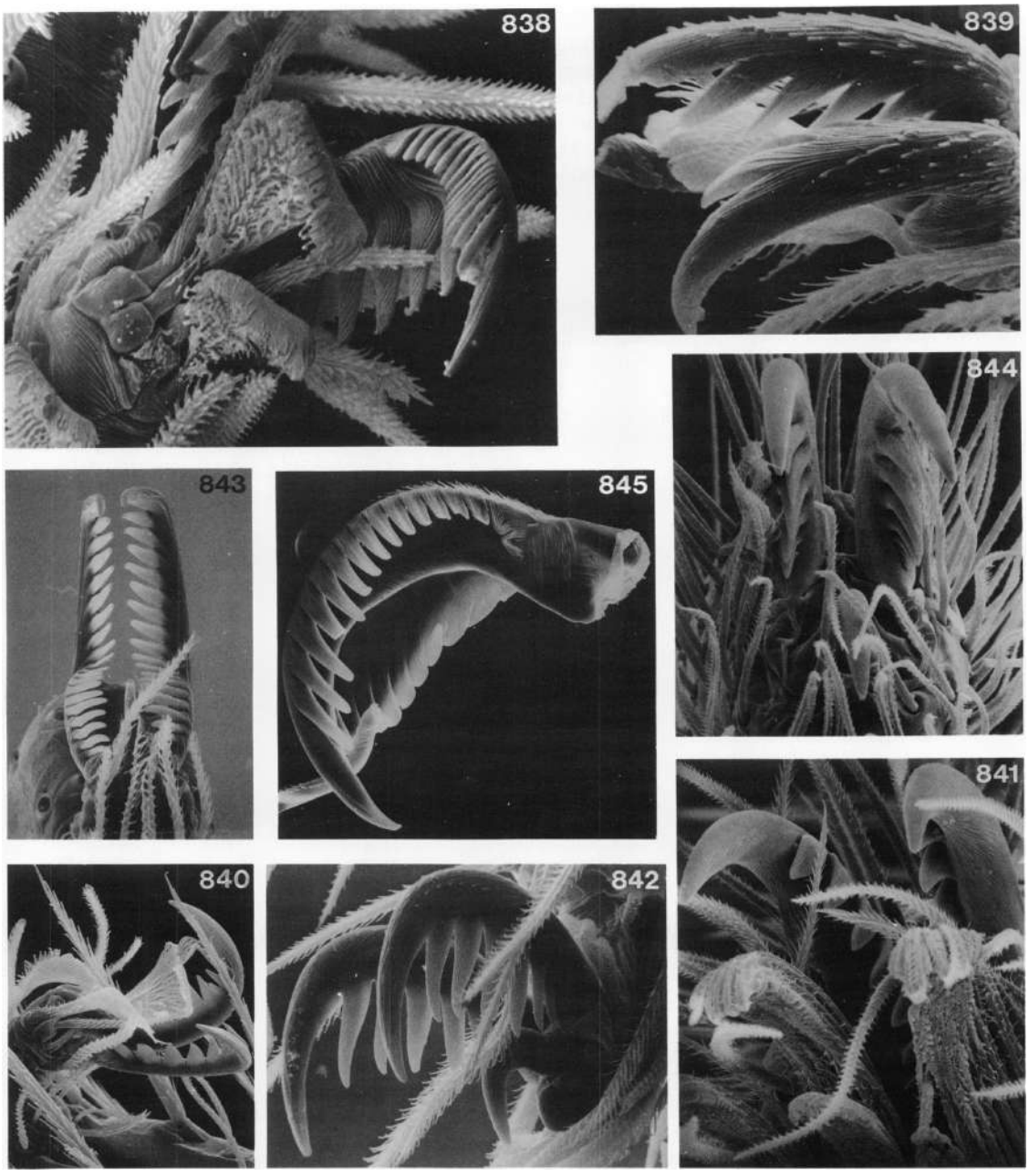
If this suggestion is valid then the evolutionary picture is clear. The primitive dysderoid genitalia consisted of an anterior receptaculate organization (as in other haplogynes) in association with a posterior secretory gland system. The lineage is then characterized by the modification of the poreplate and gland into a posterior receptaculum. In the orsolobid *Subantarctia,* receptaculate development did not proceed and as the anterior storage capacity has also been reduced in comparison with other orsolobids, the bulk of the sperm storage is taken over by the bursal cavity.

There is an extraordinary degree of similarity in both the anterior and posterior elements of the genitalia of some genera of Orsolobidae, Oonopidae, and Dysderidae (figs. 830–837) which, if this hypothesis is accepted, must be due to parallel development. In support of this conclusion, it is clear that different degrees of development of the posterior receptaculum are repeated within each family; the presence of these stepped similarities cannot be readily explained in any other way. In all families, there is a tendency for the storage function of the anterior genitalia to become reduced as the posterior receptaculum becomes larger. As the posterior receptaculum enlarges, the secretory tissue surrounding it becomes extended into a thin layer. In some genera, the secretory cells are grouped and discharge into the lumen through specialized projecting ducts (fig. 837).

The posterior receptaculum is generally a single sac and although in some oonopids this may be divided, the original single origin of the organ remains clear. In the Oonopidae, Dysderidae, and Orsolobidae, the anterior portion of the genitalia may be secondarily reduced to little more than a secretory structure from which the glandular secretions pass back to the bursal cavity through a narrow duct; in these spiders, the sperm storage function has been taken over almost completely by the posterior sac (although sectioning shows that sperm do penetrate all cavities in which the secretory fluid is lodged.

This sequence is readily illustrated within the orsolobid genus *Tasmanoonops* (and is repeated, to a lesser extent, within the Chilean genus *Osornolobus*). Many species of *Tasmanoonops* have discrete receptacula associated with the anterior genitalia; these open separately into the bursal cavity at the base of the median rod. In some species they are paired, whereas in others there is a single structure, apparently developed by fusion. Although the median rod may be hollow, there is apparently no associated secretory gland in these species. In other species, where the separate receptacula have disappeared, the rod usually bears a number of pores which pass secretions from an associated gland into the lumen. It seems that in those instances the median rod (primarily an attachment base for the complex genitalic musculature) has secondarily assumed a receptacular function. The lumen of the rod, which opens into the bursal cavity, is filled with secretory fluid and (as with typical receptacula) is often found heavily charged with sperm.

Two species of *Tasmanoonops* (*T. mysticus* and *T. trispinus*) have undergone secondary receptacular development in the posterior section of the genitalia. In most species of *Tasmanoonops,* there is a separate secretory gland at the base of the large posterior recep-



FIGS. 838–845. Tarsal claws. 838. *Gamasomorpha* sp., Oonopidae. 839. *Dysderina* sp., Oonopidae. 840. *Anophthalmoonops thoracotermitis* Benoit, Oonopidae. 841. *Dysdera crocata* C. L. Koch, Dysderidae. 842. *Harpactea hombergi* (Scopoli), Dysderidae. 843. *Rhode biscutata* Simon, Dysderidae. 844. *Ariadna* sp., Segestriidae. 845. *Tasmanoonops elongatus*, new species, Orsolobidae.

taculum that opens into the sac through an aggregation of pores. In these two species, however, small receptacula are present in this region and are probably derived from the separate secretory gland.

In other genera (such as *Duripelta*, fig. 835),

where no median muscle plate is present, there is a distinct median anterior receptaculum which can take many shapes but is usually represented by a distally expanded, blind sac, surrounded by secretory tissue, from which a slender duct extends back to the bursa. Histological study shows that these structures (including the median muscle plate when it is hollow) still function as sperm reservoirs. Although a well-defined musculature is found associated with the anterior genitalia in all of the dysderoid families, it is extraordinarily prominent in some of the orsolobid genera, particularly in *Tasmanoonops,* where the heavily sclerotized plates which serve for muscle attachment lend a complexity to the anterior genitalia which is not actually related to sperm storage (fig. 833).

Legs

There can be no doubt that the presence of spines on the legs is a primitive character for the Dysderoidea, as some form of spination occurs in all of the families. In the Segestriidae and Oonopidae the presence of a double row of strong spines on the ventral surface of tibiae and metatarsi I and II is commonplace, but this form of spination is not found in either the Dysderidae or Orsolobidae. In both of those families spines are usually present only on the posterior two pairs of legs. The general tendency within the Orsolobidae is toward the loss of spines, as a number of genera have no spines at all and in some (such as *Tasmanoonops*) a reduction in spination is clearly shown.

In the Orsolobidae the legs are uniformly clothed with ciliate hairs and scopulae are not present. Many genera have a prominent claw tuft of distally spatulate hairs below the claws; even in genera which do not have spatulate hairs numerous unmodified hairs are usually present below the claws, suggesting that in this family the plesiomorphic form is the spatulate claw tuft (which in some genera has reverted to filiform hairs).

The inferior claw is lacking in all orsolobids and the superior claws are markedly modified. They are flattened dorsoventrally to form a broad, convex plate, and are strongly pectinate along each margin (fig. 845). There is a pad below the paired claws in the position where the third claw would normally be situated and it is assumed that this is a vestigial structure representing a third claw. A similar pad is present in some two-clawed Dysderidae (*Dysdera*) and is also found in a number of oonopid genera. The dorsal surface of the orsolobid claw is always closely clothed with slender denticles (fig. 847); although these are also present in many oonopids and dysderids (including species with three claws), in the latter two families there are relatively fewer denticles (figs. 841, 842).

There is no reason to doubt that the presence of three claws is primitive for the Dysderoidea. Although it is possible that the two-clawed condition is synapomorphic for the Orsolobidae plus Oonopidae, this cannot be so in the Dysderidae, where the third claw is usually, but not always, retained. The question which remains is whether the bipectinate form of the superior claws is plesiomorphic for the Dysderoidea as a whole, or a further synapomorphy for the Orsolobidae plus Oonopidae. There can be little dissent from the view that within the Oonopidae, the relatively rare occurrence of a single row of teeth is a derived condition due either to the loss of one of the two original rows of teeth or from the merging of the original two rows into a single row (fig. 839). The segestriids, however, all have only a single row of teeth (fig. 844) and there is nothing in the claw structure to suggest a possible bipectinate origin. In the Dysderidae, although most genera have only a single row of teeth, there is strong evidence to suggest that this is a secondary condition which has been derived from a double row. Of all the known genera, only *Dysdera* has two claws and in that genus only a single row of teeth is present. However, these teeth are placed along the inner margin of each claw (fig. 841), suggesting that the ancestral claw was bipectinate and that the outer row has been lost (as in the oonopid *Dysderina,* fig. 839). In addition, the distribution of the teeth in some of the three-clawed dysderids (such as *Rhode,* fig. 843) strongly suggests an origin from a double row. When viewed from below, the row is sinuous, skirting first the outer and then the inner margin of the claw. This distribution might be expected if a relatively broad bipectinate claw (such as a typical oonopid claw) was trans-

formed into the slender form characteristic for these three-clawed spiders. With only a slight subsequent alignment of the teeth, all traces of a bipectinate origin would be lost and the claws would then appear as they do in the Segestriidae.

While this reasoning may appear unnecessarily tortuous, progression from a bipectinate to a unipectinate claw does eliminate the need to postulate the independent appearance of a second tooth row a number of times and then in some genera (such as *Dysdera*) for one of those rows to be lost again.

If this interpretation is correct, there are only two regressive steps required to account for all of the forms of dysderoid claws from the primitive three-clawed state: first, the loss of the third claw, and second, either the merging of the two rows of teeth on the superior claws (when the claw is too slender to bear two rows), or alternatively the loss of one of the rows. The early loss of the third claw appears to favor the retention of both rows of teeth but (as may be seen in the Oonopidae) one row may subsequently be lost (figs. 838–840).

The bipectinate condition is constant in the Orsolobidae, where the extreme dorsoventral flattening and lateral extension of the claws has led to a specialized structure which, in association with the prominent onychium and proprioreceptor bristles on the tarsus, forms a conspicuous feature of the family. It is evident that this unusual pedal mechanism is also a plesiomorphic character for the Oonopidae, but in that family the claws have not become expanded to the same degree and (in addition to the occasional loss of the second row of teeth) the proprioreceptor bristles are absent in many genera.

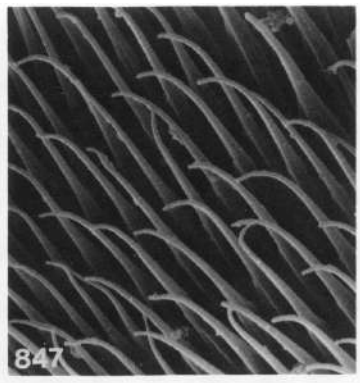
The tarsal proprioreceptors consist of a pair of rigid, erect, setiform bristles situated on the distodorsal surface of each tarsus. They are positioned so that when the onychium and claws are bent back along the tarsal surface, the denticulate surface of the claws comes into contact with the branched distal portion of the bristles (figs. 846–852). The bristles are not articulated and therefore may be readily distinguished from the adjacent hairs; they rise from a large but shallow pit delineated by a marginal ridge. In some genera of orsolobids the basal region is raised above the tarsal surface. The sensilla were first noticed in the New Zealand orsolobids by Forster (1956), who referred to them as "tarsal thorns." At that time the function of the structures was not understood because, apart from the regularity of their occurrence, they appeared under light microscopy to be little different from normal hairs.

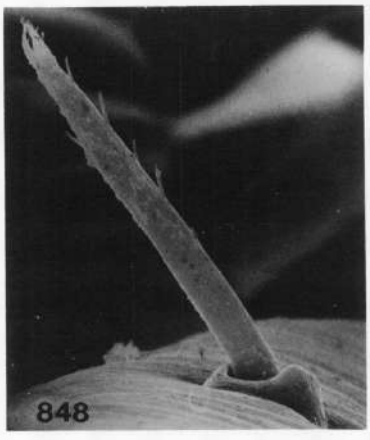
We have failed to locate comparable structures in the other onychiate haplogyne families, all of which differ perhaps significantly from the Dysderoidea in being web dwellers. Observations on the larger orsolobids show that the whole onychiate structure is independently mobile, so that when the onychium and claws are placed in full contact with the substrate they are bent back along the tarsus itself and place the proprioreceptors under pressure.

Tarsal Organ

Although the tarsal organ provides no useful synapomorphy which can be used to characterize the dysderoid families as a group, the organs are distinctive for each family and, in particular, provide a consistent character which sets the orsolobids apart from other families.

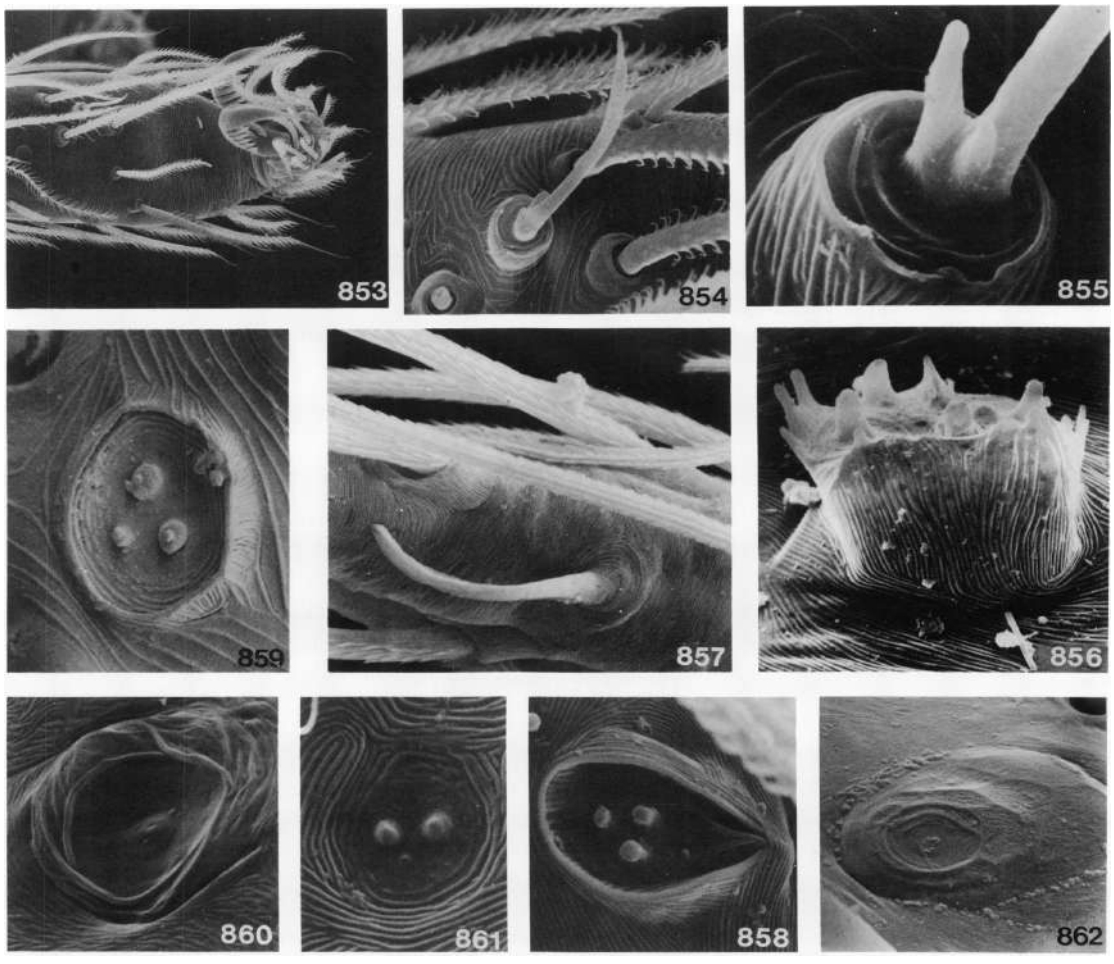
The orsolobid tarsal organ, which shows the greatest range of forms of all dysderoids, is characterized by a strongly raised mound and, in most genera, by the presence of cuticular lobes in addition to the sensillae (figs. 853–856). The plesiomorphic form is probably that found in such genera as *Subantarctia, Orsolobus,* and some *Tasmanoonops,* where the mound is approximately as wide as high and ringed apically with cuticular lobes surrounding an extensive sensory region, which primitively bears several sensillae (probably five or six, as in some *Tasmanoonops*). The trend is then for the sensillae to be reduced to two or three. From this generalized organ, two developments are found. In one the mound itself becomes elongated, thus raising the receptor region further above the tarsal surface or, in contrast, the mound may retain its normal height but one of the receptor lobes becomes greatly elongated to form a slender spine (fig. 854). In a few instances, both of these developments have occurred together.





FIGS. 846–852. Proprioreceptor bristles. 846–848. *Tasmanoonops alipes* Hickman, Orsolobidae. 846. Distal portion of tarsus I, showing placement of bristles, with claws on narrow flexible onychium. 847. Magnified view of dorsal surface of claw, showing dense covering of spines that contact proprioreceptor bristles when claws bend back against tarsal surface. 848. Detail of bristle. 849. *Duripelta borealis* Forster, Orsolobidae. 850. *Scaphiella scutata* Chickering, Oonopidae. 851, 852. *Gamasomorpha* sp., Oonopidae. 851. Distal portion of tarsus, showing placement of bristles. 852. Detail of bristle.

In all other dysderoid families the organ is either only slightly raised above the tarsal surface or the receptor region is sunken to form a cup. In the Segestriidae the mound is usually elongate and only slightly raised, with the receptor region situated on the distal por-

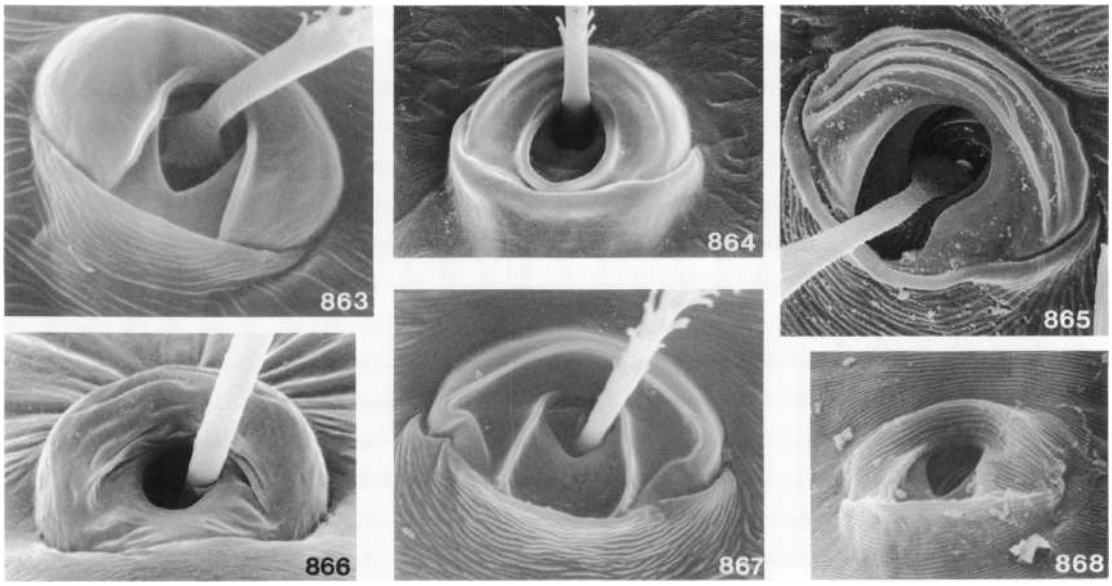


FIGS. 853–862. Tarsal organ. 853–855. *Duripelta borealis* Forster, Orsolobidae. 856. *Tasmanoonops alipes* Hickman, Orsolobidae. 857. *Ochyrocera* sp., Ochyroceratidae. 858. *Oonops pulcher* Templeton, Oonopidae. 859. Unidentified oonopid from Cuba. 860. *Dysdera crocata* C. L. Koch, Dysderidae. 861. *Harpactea hombergi* (Scopoli), Dysderidae. 862. *Ariadna* sp., Segestriidae.

tion (fig. 862). In that family the receptor lobes are always small. A distinct mound is only rarely present in the Dysderidae, and then it is usually low with the receptor region depressed (fig. 860); more commonly the receptor region is level with the tarsal surface (fig. 861). The oonopid tarsal organ is usually a keyhole-shaped depression flanked by a low ridge (fig. 858). In some species the cup is circular (fig. 859) and the distal ridge reduced, but even in those species the constriction of the distal rim points to its derivation from a typical keyhole organ. Machado (1951) recorded a spiniform tarsal organ (papille tarsale) in some ochyroceratids which might be thought comparable with the orsolobid structures, but these single-spined organs rise directly from the tarsal surface and any similarity with the Orsolobidae is only superficial (fig. 857).

TRICHOBOTHRIA

The number and distribution of the trichobothria in the Orsolobidae follow the pattern commonly found in haplogyne families. These structures are present only on the tibiae and metatarsi; usually two occur near the base



FIGS. 863–868. Trichobothria. 863. *Pounamuella vulgaris* Forster, Orsolobidae. 864. *Dysdera crocata* C. L. Koch, Dysderidae. 865. *Harpactea hombergi* (Scopoli), Dysderidae. 866. *Ariadna* sp., Segestriidae. 867. *Xyphinus* sp., Oonopidae. 868. *Oonops pulcher* Templeton, Oonopidae.

of the tibia and a single subdistal trichobothrium occurs on the metatarsus. There is a limited range of forms of the bothrium in the dysderoid families (figs. 863–868) and these provide little information of value in phylogenetic analysis beyond the generic level. The organ is simple, with a proximal hood which is usually smooth but may be transversely depressed to form two or three widely spaced transverse ridges. The hood may pass down the sides of the tricheme aperture (as is typical for the Orsolobidae, fig. 863) or (as in *Dysdera*, fig. 864) may completely encircle the aperture. Generally surface sculpture of the bothrium is lacking but it is characteristic in the Oonopidae for the whole structure to be closely ridged in much the same way as the surrounding cuticle (fig. 868).

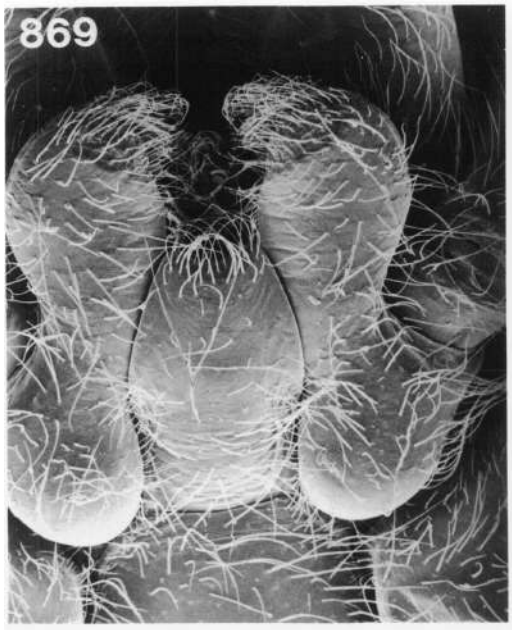
ENDITES AND LABIUM

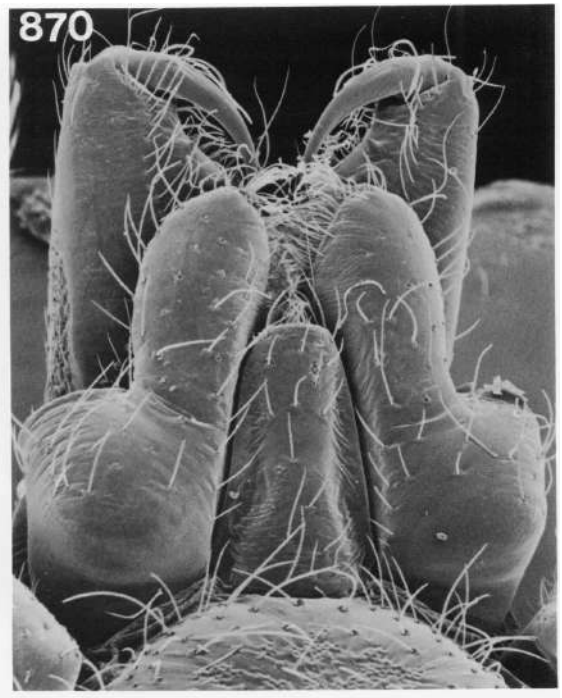
The endites and labium vary little in the Dysderidae (fig. 870), Segestriidae (fig. 869), and Orsolobidae (fig. 872). In each of these families the endites are strongly developed, longer than wide, and directed along the lateral margins of the labium so that they are parallel or nearly so. The serrula is well developed as a single row of denticles. The labium is distinctly longer than wide. The main differences are found in the Oonopidae, where the labium may be wider than long, with the lateral margins convergent (fig. 871). The endites, which are often slender, are also convergent and tend to meet beyond the labium; in many species, they are bizarrely modified (particularly in males).

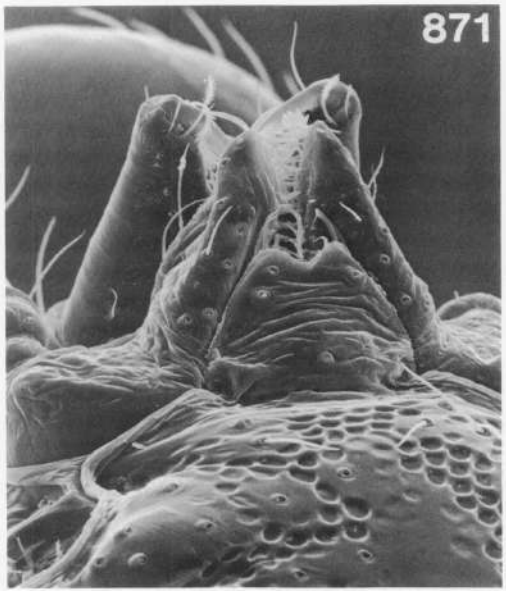
CHELICERAE

The dysderoid chelicera is not modified and lacks the lamella found in scytodoid groups. The primitive dentition appears to be 2 + 2, which is the common formula for the Dysderidae (fig. 878) and the Orsolobidae (fig. 874) except for *Tasmanoonops* (fig. 873). In most Oonopidae no teeth are present and in some genera the promargin is flanked with specialized hairs that appear to be sensory (fig. 877).

Within the Segestriidae the dentition of *Ariadna* is somewhat different as the teeth are conical and ridged, and may thus have a different origin.





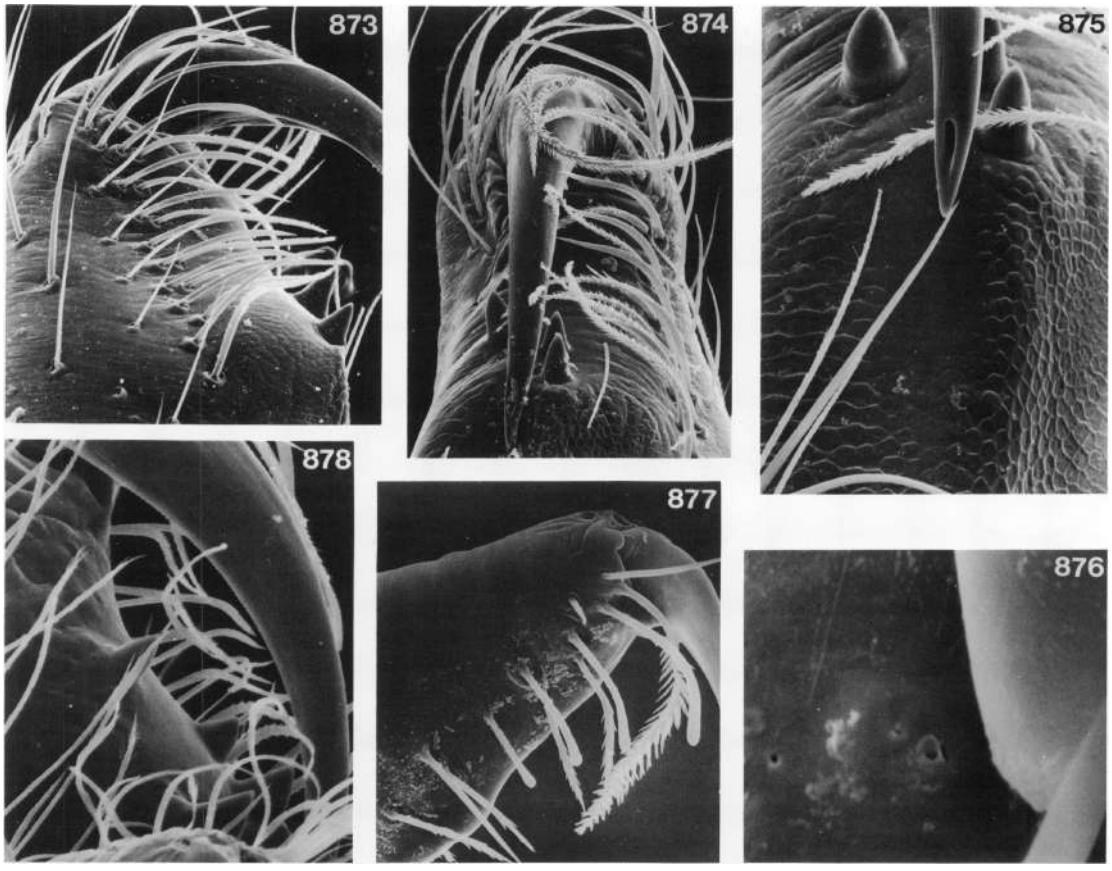


FIGS. 869–872. Endites and labium. 869. *Ariadna* sp., Segestriidae. 870. *Harpactea hombergi* (Scopoli), Dysderidae. 871. *Stenoonops nitens* Bryant, Oonopidae. 872. *Subantarctia turbotti* Forster, Orsolobidae.

The cheliceral gland is rudimentary in the Orsolobidae, with only a few pores opening from the ventral surface immediately behind the tip of the fang (figs. 875, 876).

SPINNERETS AND COLULUS

All dysderoids have six functional spinnerets (fig. 879), which in the Orsolobidae are subequal in length. The anterior pair is com-

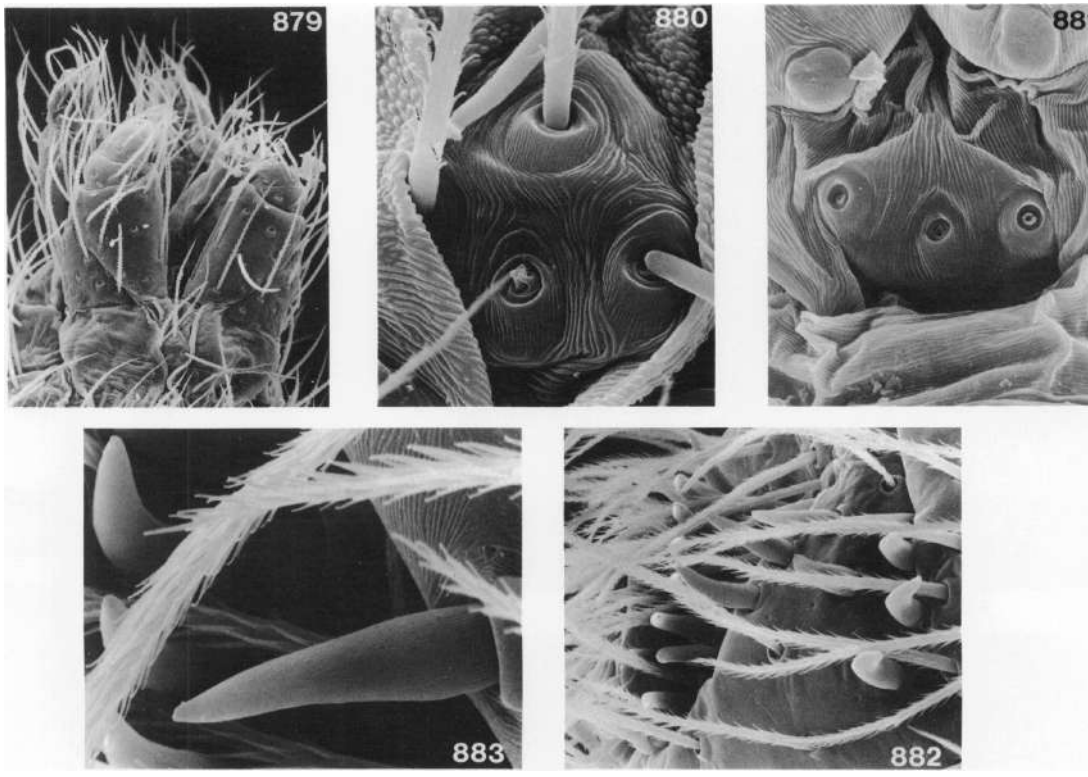


FIGS. 873–878. Chelicerae. 873. *Tasmanoonops alipes* Hickman, Orsolobidae. 874–876. *Orsolobus* sp., Orsolobidae. 875. Relatively smooth cuticle behind fang tip, bearing openings of cheliceral gland. 876. Cuticle near tip of fang with scattered pores. 877. *Stenoonops nitens* Bryant, Oonopidae; note absence of teeth and row of four distally expanded sensory hairs. 878. *Harpactea hombergi* (Scopoli), Dysderidae.

posed of three segments. Some species of *Tasmanoonops* possess an unusual arrangement of dark denticles on the ventral surface of the basal segment of the anterior pair of spinnerets. These denticles, which are apparently modified hairs (figs. 882, 883), occur only in the female. There is a group on the median surface and a further row along the distal margin. Although some genera, particularly in the Oonopidae, lack any trace of a colulus, this structure is plesiomorphic for all of the families. It is well developed in most orsolobids; although it appears only as a multisetose lobe in *Orsolobus* and some related genera, it is present as a well-defined sclerotized plate in most of the smaller species (when in this form, the setae are limited in number, fig. 880). When present in the Oonopidae, the colulus is usually in this latter form (fig. 881).

Respiratory System

All dysderoids possess four prominent spiracles, one pair in the normal position along the epigastric furrow and a second pair immediately behind. Invariably, the anterior pair leads into booklungs and the posterior pair into tracheae. Levi (1967) reported that booklungs are absent in some genera of Oonopidae but reexamination of those genera (by Forster) has shown that although the



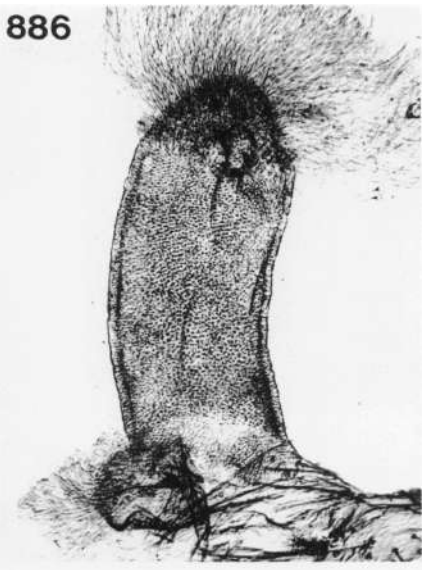
FIGS. 879–883. Spinnerets and colulus. 879, 880. *Ascuta media* Forster, Orsolobidae. 879. Spinnerets from below. 880. Colulus. 881. *Stenoonops nitens* Bryant, Oonopidae, colulus. 882, 883. *Tasmanoonops daviesae*, new species, Orsolobidae. 882. Ventral surface of basal segment of anterior spinnerets of female, showing denticles present in some species of *Tasmanoonops*. 883. Enlargement of one denticle, showing typical longitudinal ridging.

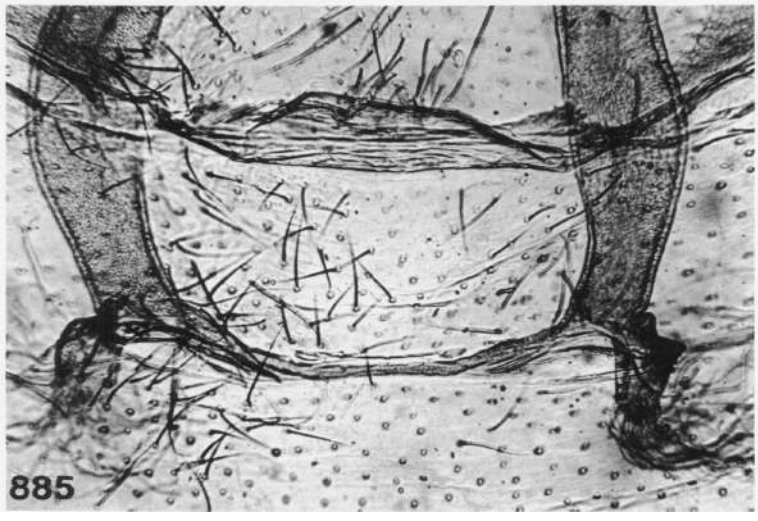
number of lamellae may be reduced to as few as four or five, functional booklungs are always present.

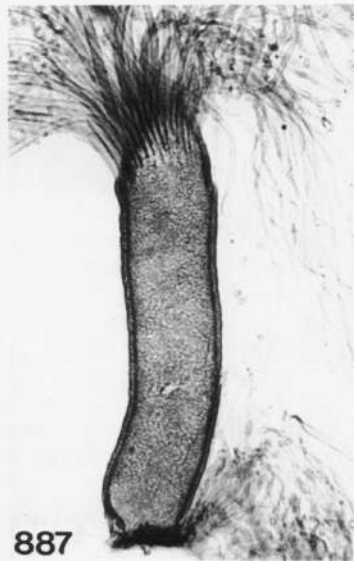
Basically, the tracheal organization is similar in all four families. The spiracles are widely separated and lead into a stout tracheal trunk which is directed forward to near the petiole before breaking up into a compact bundle of fine tracheal tubes. These two bunches of fine tracheae pass through the petiole and, once within the prosoma, ramify and penetrate into all of the appendages. The abdomen is provided with numerous small tracheae which arise either directly from the base of the main trunks or from a lateral lobe in the same position (fig. 887). There seems to be no major phylogenetic significance to these two different forms of abdominal tracheation; both may occur in each family.

Some of the gamasomorph oonopids diverge from the normal pattern in that the main tracheal trunks carry on through the petiole before breaking up into tracheoles within the prosoma; this development has not been recorded in the other families.

Lamy (1902) recorded the presence of a transverse duct between the tracheal trunks of some of the oonopids he examined. Earlier investigations failed to locate a similar duct in the Orsolobidae, but the presence of a transverse furrow between the posterior spiracles in *Orsolobus* and *Falklandia* suggested that a transverse duct might be present in these two genera; this has been confirmed from stained preparations. In both genera the duct is very narrow but, as the inner surface is usually lined with spicules similar to those of the main trunk, it is probably functional





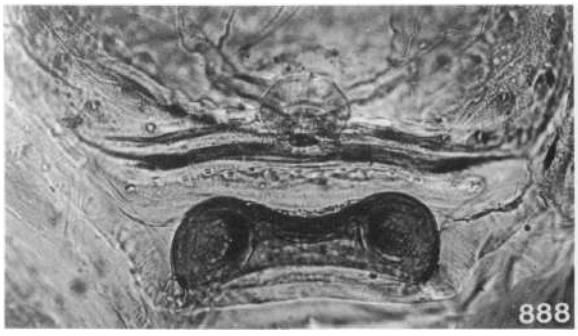


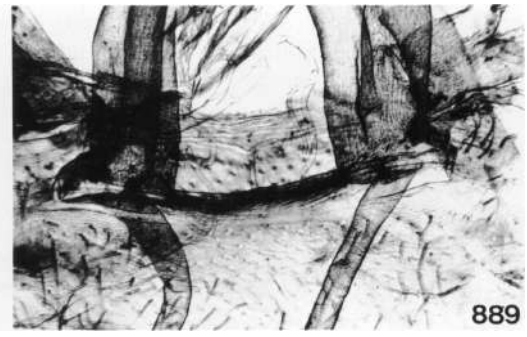
FIGS. 884–887. Tracheal system. 884, 885. *Orsolobus* sp., Orsolobidae. 884. Full tracheal system photographed with dark field; booklungs show as pale patches. 885. Basal portion of tracheal system, showing slender transverse duct linking the atria. 886. *Ariadna* sp., Segestriidae, left tracheal trunk with transverse duct extending to right. 887. *Ascuta media* Forster, Orsolobidae, right tracheal trunk; note absence of a transverse duct.

(figs. 884, 885). In *Orsolobus schlingeri*, however, the duct lacks this lining.

The transverse duct is presumed to be a primitive character which has been lost in the similar genera *Subantarctia* and *Tasmanoonops* and in most of the smaller orsolobids. A transverse duct has not been found in any of the dysderids examined but there is a distinct transverse structure linking the tracheal trunks in the segestriid genus *Ariadna* (fig. 886).

Although the tracheal system of the dysderoid families is fairly well known, its precise origin has been the subject of speculation





FIGS. 888, 889. Tracheal system. 888. *Brignoliella* sp., Tetrablemmidae; note widely spaced spiracles, from each of which two trunks lead anteriorly. 889. Unidentified caponiid.

unsupported by evidence. There are three alternative homologies possible: (1) direct development from the booklung lamellae, (2) modification of the muscle apodemes (if associated with the transverse duct), or (3) a combination of both of these developments, with the lateral basal tracheae developing from the apodemes and the main trunks developing from the booklungs. The discovery of typical apodeme lobes associated with the transverse duct of *Chileolobus eden* (in conjunction with the typical orsolobid tracheal system) now demonstrates that the tracheal system in this family has developed solely from the booklungs. Because the Australian and New Zealand segestriids of the atypical genus *Gippsicola* have similar apodeme lobes, the same is probably true for the dysderoids as a whole.

CONCLUSIONS

Although the Dysderoidea is a well-defined group, relationships within the superfamily remain fully as obscure as the question, addressed above, of what the superfamily's sister group may be. In part this is because the monophyly of the Oonopidae (minus, of course, the genera here transferred to the Orsolobidae) has never been demonstrated, and revisionary studies of the diverse assemblage of genera placed there are necessary for enough character information to become available to judge the issue. Certainly some features, particularly the presence of tarsal proprioreceptor bristles, suggest that the closest relatives of the orsolobids occur within the Oonopidae. The fact that some oonopid genera lack those bristles may be due to the loss of a plesiomorphic structure or simply to the polyphyly of the family as it is currently limited.

Not enough is known at present to fully analyze the interrelationships among the various orsolobid genera, and the few characters available are not very congruent. There is little doubt, for example, that the extraordinary male palp of *Chileolobus* represents the most primitive form within the family, and that the other genera are united by the fusion of the palpal elements still found separate in *Chileolobus*. One could then envision a cladogram in which *Orsolobus* branches off immediately after *Chileolobus*, for the remaining taxa have lost the tracheal interconnection found in those two genera and in at least some segestriids. However, this arrangement is contradicted by the tarsal organ, for *Chileolobus* shares with a third genus, *Osornolobus*, one of the most derived tarsal organ morphologies of any spider. In those genera the organ itself has become greatly elongated and, in addition, one of the receptor lobes has become a spine that is as long again. An additional contradiction arises from the female genitalia, which suggest instead that all genera other than *Subantarctia* are united by the transformation of the posterior elements from a secretory poreplate into a receptaculate system.

This lack of resolution is particularly unfortunate, of course, because of the obvious utility a cladogram of the Orsolobidae would have in analyzing relationships among the various parts of the group's Gondwanian distribution. In that context, what is most need-